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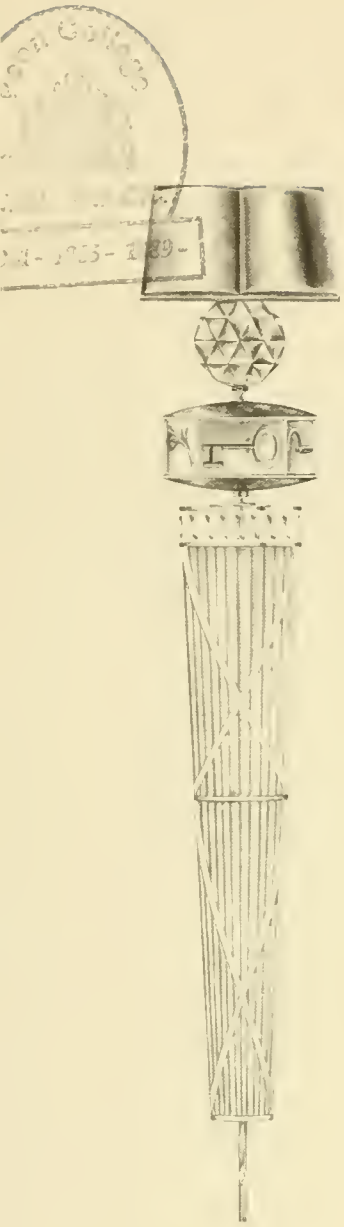
WACC

# THE WILLIAMSPORT AREA COMMUNITY COLLEGE

CATALOG 69/71



# Philosophy

*The Williamsport Area Community College is committed to an educational program which recognizes that:*

1. *The complexity and interrelatedness of modern society demands optimal involvement of community resources;*
2. *A productive and educated citizenry is a vital community resource;*
3. *The productive and educated citizen is one who is involved in the continuing, life-long process of acquiring self-realization, a commitment to community service, a unified body of knowledge, a habit of evaluative thinking, some sensitivity to art forms, an appreciation of his social, cultural, and political heritage, a pattern of ethical and moral behavior, and skills useful in the productive efforts of society;*
4. *An institution of higher education has responsibility to provide programs of study and an environment conducive to intellectual growth and character development;*
5. *Higher education, through a comprehensive range of programs designed for the widest possible spectrum of interests, abilities, and needs, must be available to all who can profit from it.*

# Objectives

*Through a favorable educational climate consisting of a close student-teacher relationship, a faculty committed to teaching, and an administration to making possible the most effective learning situation, The Williamsport Area Community College devotes its efforts toward providing the following:*

1. *Individual and group counseling as well as formally structured programs to aid applicants and students select and pursue sound life and vocational aims;*
2. *Developmental programs to assist students in preparing for college-level study;*
3. *Two years of college work leading to an Associate of Arts or Sciences degree designed to prepare students for transfer toward a baccalaureate degree at four-year colleges and universities;*
4. *Two years of college work leading to an Associate of Applied Arts or Applied Sciences degree designed to prepare students for entrance into paraprofessional or technical careers;*
5. *Special programs leading to certificates of proficiency designed to prepare students for employment in health, business, industry, or other fields;*
6. *Community service and continuing education, including seminars, workshops, and instruction in the worthwhile use of leisure time and the updating of knowledge and skills;*
7. *A campus environment that both supplements and extends the educational program;*
8. *Assistance to graduates seeking placement in other colleges and in careers for which they are prepared.*

There is an educational opportunity for every member of the family at WACC!

*An addendum for this catalog, written June, 1970, for the purpose of updating the publication, follows page 272. Revisions, deletions and additions affecting catalog contents are listed under eight divisions.*

## THE WILLIAMSPORT AREA COMMUNITY COLLEGE IS FOR YOU –

If you wish to be part of an exciting collegiate learning experience

If you wish to complete *the first two years of collegiate-academic credit* and transfer to a four-year institution for your baccalaureate degree

If you wish to complete a *one or two-year study of a selected technology* which will prepare you for immediate entry into business or industry

If you wish to *make up educational deficiencies* in order to enroll in an academic or technical program

If you wish to enroll, day or night, to *up-grade yourself occupationally*

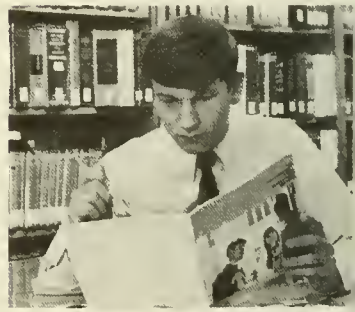
If you wish to enroll in individual classes or full programs for *cultural development and enjoyment*

If you wish to attend a college where the *students* are of *prime importance*

If you wish to be stimulated by great instructors, counselors, and fellow students

If you wish to attend two years of college at a *minimum cost*

The Williamsport Area Community College is a two-year, co-educational, publicly supported institution serving the North-Central Pennsylvania area.



## ACCREDITATION

The Williamsport Area Community College holds the status of a *Recognized Candidate,* as designated by the Middle States Association of Colleges and Secondary Schools. This status is conferred upon those institutions which indicate steady and proper progress toward accreditation. Acceptance as a *Recognized Candidate* for Middle States Association accreditation attests that the Commission on Institutions of Higher Education considers an institution to be offering its students the educational opportunities implied by its objectives. In the Commission's view the institution's organization, structure and staffing are acceptable for its stage of development; its sponsors are committed to supplying its needs and are able to do so; its governing body is functioning properly; and its academic and financial plans are well designed.

# HOW TO USE THIS CATALOG

Think of this catalog as a conversation with many new friends who want to help you. Read what they have to say.

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*YES, THERE'S AN APPLICATION REQUEST CARD BACK THERE TOO!*

DR. KENNETH E. CARL, President

# *PRESIDENT CARL ADVISES YOU ABOUT YOUR CAREER*

The fact that you are reading this catalog means that you are considering attending a two-year college. But interest is not enough to make sure that your choice will be right and that your college career will be effective. Statistics show that more than half of all students who start college never graduate. This could mean that there is something wrong with the students, with their college choices, or with their selected programs.

If you want to be part of the half that succeeds, there are practical steps that you can take. These practical steps are based on knowledge — knowledge of yourself, knowledge of the range of educational opportunities available, knowledge of the specific college which may be right for you.

Many books have been written about occupations and career choices. Today, most schools provide vocational guidance and offer occupational courses.

Although such courses and books are necessary for your training, the most valuable experience for you right now is to think about yourself in relation to your life's work.

*WHAT ARE YOU GOING TO DO WITH THE NEXT FIFTY YEARS OF YOUR LIFE?*

Actually, that is what the whole question of career choice means.

In fifty years or less you will be ready to retire. What are you going to do between now and then?

The question of what you will do in the next two, or four, or six years is not nearly so important as what you will have accomplished fifty years from now. But what you decide now and what you do in the next two or six years will determine the course of the next fifty years.

Are you going to drift into a job? Are you going to keep working at a job you're not satisfied with? This may be the most important decision of your life.

*WHEN SHOULD YOU BEGIN TO CHOOSE YOUR CAREER?*

Even if you are still in junior high school, you should begin to think about "the next fifty years." If you are a high school junior or senior, the time is now. If you are out of school and working, it is not too late.

Of course your choice may be and should be tentative. That is, you should keep your decision subject to change. As you learn more about yourself and more about occupations, you may wish to revise or change your choice. This is desirable if you act on new and pertinent information.

Our hope is that you will have at least some general idea of your choice before you enter college. In order to make a wise choice of college and of your major program in college you need to know the general direction in which you expect to go in the next fifty years.

For those of you who are uncertain, we have a Vocational Diagnostic Program, a program designed to assist students in career selection through testing, counseling, and actual job trial experience. We also have a College Skills Program which was designed to meet the needs of students who require further preparation before they can enroll in a college program.

*WHAT FACTORS SHOULD INFLUENCE A CAREER CHOICE?*

Obviously, you should be influenced by two broad considerations: yourself and the occupation. This means that you must know yourself — physically, mentally, socially; your aptitudes, interests, and abilities.

You need to know careers. This takes time, study, and effort. But it is interesting and rewarding. You should analyze yourself in relation to many possible careers.

*KNOWING YOURSELF*

You can make certain broad generalizations about yourself in different areas. Some of these will overlap. In the next few years some will change. When you analyze your likes and dislikes, think not only of what you like now, but of what you probably will like ten, twenty-five, or forty years from now.

*LEARNING ABOUT CAREERS*

Be alert to all the possibilities in your school and home and community to learn about different occupations and professions. Do not just assume that you will be a physician, or an engineer, or a lawyer, and stop there. Explore a wide range of careers.

*TEN SUGGESTED STEPS IN CHOOSING A CAREER*

In conclusion, let me suggest ten steps to help you choose your career or career area:

1. Analyze yourself. What are your interests, aptitudes, abilities? Talk with your parents, teachers, and counselors. If possible, take some intelligence and aptitude tests. But remember that tests, family, and friends cannot choose your career for you. Family and friends can only make suggestions to help you understand yourself. Tests can act only as directional signs. The best analysis of yourself is made by yourself.

2. Learn to be honest with yourself. Examine your weaknesses as well as your strengths. Improve your strengths and try to overcome your weaknesses. For instance, if you want to be an engineer but

have a poor record in mathematics, work harder on your mathematics. If after a sincere effort to master mathematics your record is still low, it is time to be honest with yourself and to investigate other career areas.

3. Try to decide what you want to get out of life and what you want to contribute to life. Is it money, fame, happiness, friendship, service to your fellowmen, or something else?

4. Group into broad areas the types of careers which have interested you most as you went over these first three steps. These are the basic steps in becoming acquainted with yourself intellectually. Your honest self-analysis and your interests will suggest some broad areas of activities. Write these down and think about them.

5. Read widely about these areas. A particularly interesting plan is to read biographies of people who have been successful in the career areas you are considering. You will want to read weekly and monthly magazines for new developments and announcements in these fields of endeavor. Frequently, students have kept scrapbooks or folders of clippings about particular career areas.

6. Confer with men and women in your community about different career areas. Such people may be friends of your family or persons recommended to you by your principal and teachers or by officers of service clubs. Get first-hand information from those who are engaged in the occupations or professions which you are investigating.

7. Visit the places where these occupations and professions are practiced. Your visits may take you to industries, research centers, hospitals, art museums, concert halls — any place where you can observe people working in the career areas that interest you. Examine working conditions, pay, responsibilities, recognition of effort.

8. Make a tentative choice of one of these career areas. Whether this choice is only a hypothesis or whether you think it is fairly certain, keep it subject to re-examination.

9. Assess the possibility of attaining this goal. Be honest with yourself. For instance, if you select

medicine, can you afford ten years of study after high school? If not, is your academic record strong enough to justify your asking for financial aid?

10. Start right now, today, to make yourself a worthy candidate for your career goal. Study harder, read more, make your time count. A scientist, for example, must be precise and accurate. If you are thinking in terms of a scientific area, learn to complete assignments on time. Be accurate in your school problems. (Incidentally, this is good advice for any career.)

Now is the time to study this catalog carefully to find out if WACC has a program which will fit your abilities and needs.

DR. C. HERSCHEL JONES, Vice President

# *DR. JONES INTRODUCES YOU TO THE COLLEGE*

The Williamsport Area Community College is an open-door educational institution organized to provide the programs and courses needed by individuals in the North-Central Pennsylvania service area of the College. It serves this area in a multitude of ways by being a focal point of educational interest, a place where ideas germinate, and where a welcome sign is extended to you if you wish to learn. The Faculty, Administration, and the Board of Trustees which operate The Williamsport Area Community College work together to provide the knowledge, skills and facilities needed by students who enter a variety of business, industrial and educational fields.

To keep ahead of changing times, The Williamsport Area Community College offers more than fifty programs and other learning opportunities designed to fit your individual abilities and needs. It is one of the most comprehensive of its kind in Pennsylvania. It presently has a faculty of 204 and a fulltime student body of 2750. Its student body is composed mostly of Pennsylvania residents. However, it attracts students from nearby states and foreign nations because of the variety and excellence of its programs.

In this comprehensive College, four major areas of educational opportunities are available for you:

The School of Liberal Arts and Sciences through its College Transfer Programs will provide two years of higher education for you which will lead to the Associate of Arts or Associate of Science Degree to enable you to enter a four-year college or university in pursuit of your baccalaureate degree.

The School of Applied Arts and Sciences' Career Programs will provide one or two years of specialized education for you which will lead to a Certificate or an Associate in Applied Science Degree to prepare you for immediate employment in a broad variety of occupations.

The School of Continuing Education and Community Services' Evening and Summer Sessions will provide courses for you from the School of Liberal Arts and Sciences and the School of Applied Arts and Sciences and special programs, seminars and workshops.

The College Skills Program offers courses in mathematics, written English, reading, and science, if you need help to make up academic deficiencies in order to qualify for college-level programs. These are non-credit courses.

It is the intention of the College to offer you the educational or training program which you are best qualified to pursue. What we mean by our open-door philosophy is that we welcome you whatever your age or ability, regardless of your economic or social status. We are equally interested in you if you want to be an architect, an auto-mechanic, a sign painter, a scientist, a plumber, or a philosopher.

John W. Gardner, former Secretary of Health, Education, and Welfare, in commenting on quality and equality, sums up our philosophy:

**"The society which scorns excellence in plumbing because plumbing is a humble activity and tolerates shoddiness in philosophy because it is an exalted activity will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water."**

# *THE FACILITIES ARE EXPANDING!*

**Major expansion** *in the Rishel Building provides more classrooms and expanded library facilities. Everybody "pitched in" to move over 12,000 volumes to the new library.*

**Mrs. Mary Braucht,** *popular housemother in the new Lycoming Hotel dormitory, wishes Hester Smith a happy time as she signs out for an evening's fun.*

The growth and exciting promise of the College offers a glowing picture, for expansion has taken place in many areas beginning with the physical plant and its twenty buildings. Not content merely to drift along, the College is meeting the challenge to make its academic offerings the adventures they should be.

As the heart of any institution of higher learning is its library, our College has emphasized growth and expansion. The rapid growth of the relocated and enlarged library is mirrored in its collection of recordings and tapes, in its new microfilm readers and copier, and in its ever-expanding collection of books and periodicals. The result has been increased student use of these facilities. This year the College has launched operation of a new audio-visual center in addition to a television studio.

A role of prime importance for the College is to provide residence for its students. Providing a home-away-from-home for 100 women students resulted in transformation of two floors at the Lycoming Hotel into a dormitory.

With 1980 as the target date, it is possible to look realistically toward the day when a completely modern and readily accessible 100-acre central city campus will serve an approximate 5,000 students. Proposed plans are under way for a new library, a student center, a fine arts center, new laboratories, and study work areas for industrial, medical, and food service technologies. What better way to supply some of the solutions to the pressing need for quality education in both liberal and applied arts for the people of North-Central Pennsylvania!

**New Library Lounge**

# *MEET THE STUDENTS / Their Comments Are Important!*

## HUNT AND THERESA BROWN

Hunt and Theresa Brown found more than an education at WACC—they found one another. Theresa, 20, and Hunt, 31, who live in Liberty, were married last fall and find no problem combining marriage and study. "In fact," vouches Theresa, "would you believe that my average climbed from 1.5 to 3.3 since our marriage!" Hunt, Navy veteran, relates, "After wandering in and out of jobs, I soon realized that to get anywhere I would need a specialization. I worked and saved several years. Then I was accepted at a four-year college, but decided to enter WACC because of its excellent civil technology course. We are greatly satisfied with our study areas and instructors," Hunt declared. "WACC has tremendous assets in equipment and faculty." Hunt hopes to work for the government in the aerial photography field while Theresa plans to finish her liberal arts education wherever Hunt settles.

## CAROL GRANTIER

"I'd recommend a two-year school to anyone," Carol Grantier enthusiastically declared. "Frankly, I couldn't get into a four-year college and my education plans were stymied until my high school guidance counselor in Canton informed me of WACC." Carol, a liberal arts degree candidate in elementary education, comments, "WACC is small, thus affording many advantages for its students. Everyone, students and faculty, is willing to listen, gives individual guidance, and instruction." Anxiously looking forward to next fall, Carol will enter the Capitol Campus of Penn State in Middletown with an upperclass standing.

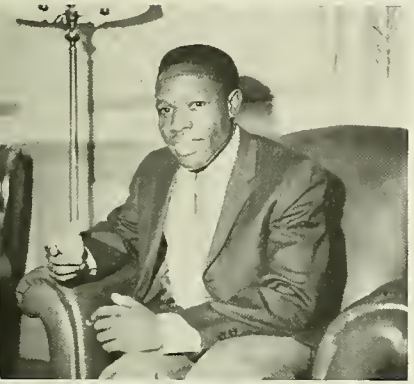
## CARY FALCK

"Welding has always fascinated me . . . I want to learn as much about it as possible . . . It's just that I've never had a great desire to be a white-collar worker." Cary Falck and his wife Kathy both attend WACC and commute daily from Lewisburg. "My father, who is a college science professor, has hoped that I would follow in his footsteps. But choosing a career is a personal decision, and Dad respected my choice. Although I am in a purely technical field, I do feel a part of an academic community - - it's simply a feeling of oneness that pervades the entire College."

Students Interviewed – Spring, '68

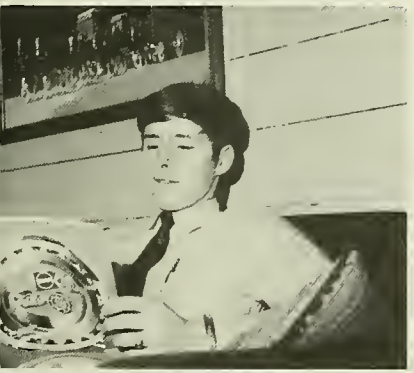
## DENNIS SHATTUCK
## KATHY FREDERICK

Dennis Shattuck and Kathy Frederick are planning their future together and laying their foundations with an education. Denny hails from Canton and is majoring in architecture while Kathy is from Blossburg and is enrolled in the computer science sequence. Planning to marry in June, Denny hopes to continue working for the school architect until Kathy finishes school. "This is the roughest task we've ever taken upon ourselves," both Kathy and Denny agree. "The pressure to do well and get a diploma is weighing heavily on us. Sometimes the goal seems impossible, but somehow we'll meet it."



## JIM PHIRI

Speaking in perfect English, Jim Phiri noted, "My training at WACC has proven to be one of the greatest experiences of my life. I have great respect for my instructors. My courses were complete and they covered every aspect of the carpentry field. I will use my training and knowledge gained at WACC to foster cultural understanding between our nations." After completing his studies, Jim plans to return to his native Malawi, Central Africa, to teach in a technical school to prepare his people for industrial progress.



## JOHN SORENSON

"Believe me," John Sorenson emphatically states, "anyone not sure of college should go out and work. He'll soon discover his limitations without a degree. I decided to go to college - - no matter what!" John, who is from Rochester, N.Y., is enrolled in the tool designing sequence at WACC. "This school really has potential," John asserts. "Although some buildings are rather dated, WACC's biggest assets - its students, its faculty, and its equipment - more than adequately compensate. They soon help you to forget this temporary situation. WACC seems to function like a family. Each member helps another to build a future."

## MICHELA RICCARDO

Michela Riccardo, a petite brunette from Lock Haven, speaks with pride of her professors and conveys an aura of self-confidence in knowing that she will be well equipped to enter the secretarial field. "I've taken everything from accounting to world and business economics, from computer programming to running a Xerox, and from English to the language of shorthand. From the very beginning, I knew that I wanted to be a secretary. I didn't want to enroll in a four-year school, yet I did want a degree beyond high school. WACC was perfect for me."

# SCHOOL OF LIBERAL ARTS AND SCIENCES

## College Transfer Programs

### *PROGRAMS FOR YOU IF YOU PLAN –*

To transfer to a four-year college or university.

To complete your college work with the attainment of the Associate of Arts or Associate of Science Degree.

To continue your training in an occupational field which has as a prerequisite two years of college.

### *TO BE ADMITTED YOU MUST –*

Be a high school graduate or have successfully passed the General Educational Development (GED) Test.

Submit a completed application form with a $10.00 application fee. This fee is not refundable.

Submit a transcript of your high school grades along with a recommendation from your high school principal or counselor.

Submit scores from either the American College Testing Program (ACT) or the Scholastic Aptitude Test (SAT). You must be available for an interview with an Admissions Counselor after submitting completed credentials.

Submit a completed Health Certificate after acceptance.

Submit the above information to the College Admissions Office.

# COLLEGE TRANSFER PROGRAMS

When The Williamsport Area Community College came into existence in 1965, the School of Liberal Arts and Sciences was established to provide two-year College Transfer Programs for area students. In 1967, the College graduated its first class with Associate of Arts and Associate of Science degrees from the School of Liberal Arts and Sciences.

These College Transfer Programs are meeting the needs of many capable students who desire a liberal education, but cannot afford the tuition and living expenses of state-supported or private universities and colleges for more than two years. Other area residents are taking advantage of these programs to obtain two years of liberal education for personal enrichment. Many bright young people whose true potential didn't show itself in pre-college years will find numerous services to unlock this potential. For some, limited academic loads may be undertaken for a semester to allow students to prove themselves. For others, enrollment in the College Skills Program which is offered within the College of Liberal Arts and Sciences opens the doors to further academic or technical training at the collegiate level.

Achievement reports on students who graduated in the first class indicate that they competed effectively with those students who had spent the freshman and sophomore years in the four-year college. In fact, their performance was superior to the national average of community college transfer students. In view of the success of our graduates, expanded facilities, and a national trend for more and more students to spend their freshman and sophomore years in two-year community colleges, the School of Liberal Arts and Sciences anticipates increased opportunities to serve tomorrow's leaders.

## PURPOSE

Courses in the College Transfer Programs parallel the traditional freshman and sophomore courses offered in four-year colleges. You may complete the first two years of a four-year degree program at The Williamsport Area Community College, then transfer to a four-year college or university to work toward a bachelor's degree.

## COURSE CREDIT AND DEGREES

A credit is a unit for measuring progress toward graduation. Satisfactory completion of each course earns for you a specified number of credits. You will need sixty credits, exclusive of physical education, to earn an Associate of Arts or an Associate of Science degree in the School of Liberal Arts and Sciences.

## TRANSFER PROCEDURES

Obtain a current catalog of the four-year college to which you plan to transfer and study its entrance requirements and its suggested freshman and sophomore programs in the major field in which you are interested.

Confer with your Williamsport Area Community College faculty advisor immediately upon enrollment about fulfilling these requirements.

Confer, either by letter or by personal interview, with an admissions officer at the four-year college for further information about curriculum and transfer regulations.

Check carefully, two semesters before transfer, to be certain all requirements will be met and all regulations will be observed to the satisfaction of the four-year college.

Give careful consideration to the fact that the acceptance of credits for courses you will complete at The Williamsport Area Community College will be determined by the institution to which you plan to transfer. Courses numbered 100 or above in the College Transfer Program course listings in this catalog will generally be accepted for credit by four-year institutions.

Register for a physical education course each semester because most four-year colleges include physical education in the baccalaureate degree requirements.

Consult with your advisor if you plan to make a last-minute change in your major field of study or in your choice of a four-year college. Such changes may create problems in transferring.

DR. OTTO L. SONDER, JR., Dean of the School of Liberal Arts and Sciences

# *DEAN SONDER ANSWERS THREE IMPORTANT QUESTIONS ABOUT THE SCHOOL OF LIBERAL ARTS AND SCIENCES:*

*"WHAT IS THE PURPOSE OF A LIBERAL ARTS EDUCATION?"*

A Liberal Arts education is a "liberating experience"—hence the term "liberal arts." The liberal education comes through a study of man's culture, his history, his arts and sciences. You will absorb new knowledge of old truths, assimilated and related anew to changed times. And, above all, your liberated mind will understand more fully that today's daring innovations are tomorrow's habits.

Of course, you realize that four years of liberal education is essential if you have as your goal a career in the professions, education, law, medicine, or business, or something else. You've been told over and over again that higher education leads to better jobs and more pay.

But, far more important, a liberal education will help you to see life more clearly, both on campus and off. It will help you to relate your current experience with the wisdom of the past, enriching both. You will learn how to communicate with others and how to contribute to a more harmonious and just society.

*"WHAT SCHOOLS WILL ACCEPT STUDENTS FROM THE COMMUNITY COLLEGE?"*

If your grades, motivation, and general college performance are good, you will have no difficulty transferring to an accredited four-year college. In fact, many of our recent graduates have gone to state colleges like Lock Haven, Mansfield, Bloomsburg, Clarion, and Millersville. Others have transferred to such schools as Cornell University, The University of Maryland, Lycoming College, Brigham Young University, The University of West Indies, PMC Colleges, and the largest single number have transferred to the Pennsylvania State University.

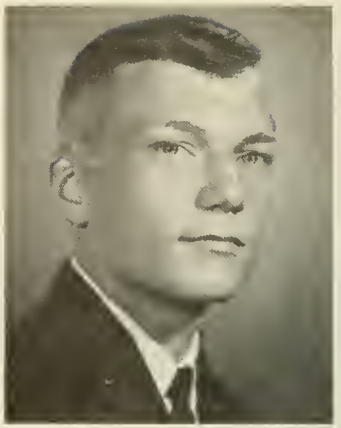
*"HOW WELL DO TRANSFER STUDENTS FROM THIS SCHOOL SUCCEED AT OTHER COLLEGES?"*

"How well do transfer students from this school succeed at other colleges?"

I know that this is one question uppermost in your minds.

I'd like you to meet several of our graduates. They'll tell you in their own words how WACC prepared them for the colleges to which they transferred.

*Tom Zimmerman, a member of the class of '67, is now attending Lycoming College. Here is what Tom says about WACC:*



"Now that I have graduated from WACC, I look back on my experience there as having been fulfilling in two important ways: first, I got enough credits with an average high enough to transfer to Lycoming College; second, I managed to save enough money, through low tuition rates at WACC and classroom hours conducive to part-time work to see my way comfortably through one year at Lycoming. Once I've finished at Lycoming, I hope to go on to graduate school and get a Ph.D. in clinical psychology.

"My teachers at WACC gave me the confidence to set my career goals. This confidence is not only the product of fine teaching but of an avid personal interest in the student as well. It is my feeling that the individual attention from the instructors at WACC is definitely the school's strongest feature. This feature challenges the larger institutions where the student is just a number. I think this hinders the discovery and expansion of the student's skills and talents."

*Connie Beinlich, now a business major at Bloomsburg State College, says this about WACC:*

"Being the oldest of nine children, I was naturally the first to choose a college. I chose WACC because it was the community college which my district sponsored and because it offered a liberal arts course.

"My classes were small—from 18 to 20 students—and this made a friendly, casual relationship between student and professor. All the professors I had were very good and I feel I got a good, well-rounded education.

"After attending WACC, I transferred to Bloomsburg State College. Now a business major, I am doing well. I've had no trouble maintaining a "B" average.

"Although many start at a four-year college, I'm glad I started at the community college. I think that after my experiences at WACC I was better prepared to continue my education in a four-year college."

*John Kaiser, a twenty-four year old veteran, graduated from WACC in 1967. He is now a senior in Electrical Engineering at Penn State. John's remarks about WACC might interest you.*

"I wanted to go to college right from the time I returned from the service, but I hadn't the finances. WACC seemed to be the answer to my problem. I could go full time for the amount it would cost to go part time at a private college. By going to WACC in the evenings I was able to work in the daytime.

"I started at WACC in September, 1965, and immediately liked it, for everyone seemed to be concerned with getting an education. The professor-student relationship seemed more informal than at most schools. They were really co-operative and helpful.

"I transferred to Penn State University and found that my background was extremely good, and I have had no trouble at all. In fact, I know it was easier for me due to the tremendous individual help I received at WACC. I am now carrying a 3.0 average and expect to graduate in March of 1969.

"I must say that I will always be indebted to WACC and to all the very fine people I met there.

"I can never stop praising WACC."

# WHERE TO FIND –

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# LIBERAL STUDIES

## College Transfer Program

## Associate Degree / Two Years

The Liberal Studies Program offers you the first two years of a four-year program leading to a Bachelor of Arts Degree. This curriculum provides you with a broad base for further education and professional development in many career fields. Your explorations in English, foreign languages, mathematics, science, and the social sciences will help you discover your greatest interests and will have significant value in your vocation. Industry and business, professional schools, and government agencies are increasingly emphasizing the importance of a broad base of liberal arts subjects as the best preparation an undergraduate student can have.

FIRST SEMESTER

| *Course* | *Credits* |
|---|---|
| English 101 - English Composition | 3 |
| History 101 - World History | 3 |
| *Foreign Language | 3-4 |
| **Laboratory Science | 3-4 |
| ***Elective | 3 |
| Physical Education 101 | 1 |
| | 16-18 |

SECOND SEMESTER

| *Course* | *Credits* |
|---|---|
| English 102 - English Composition | 3 |
| History 102 - World History | 3 |
| *Foreign Language | 3-4 |
| **Laboratory Science | 3-4 |
| ***Elective | 3 |
| Physical Education 102 | 1 |
| | 16-18 |

THIRD SEMESTER

| *Course* | *Credits* |
|---|---|
| English 201 - History of English Literature | 3 |
| History 201 - History of the United States | 3 |
| *Foreign Language | 3-4 |
| ****Mathematics | 3 |
| ***Elective | 3 |
| Physical Education 103 | 1 |
| | 16-17 |

FOURTH SEMESTER

| *Course* | *Credits* |
|---|---|
| English 202 - History of English Literature | 3 |
| History 202 - History of the United States | 3 |
| *Foreign Language | 3-4 |
| ****Mathematics | 3 |
| ***Elective | 3 |
| Physical Education 104 | 1 |
| | 16-17 |

*Required: Two years of a Foreign Language (French, German, or Spanish)-one year at intermediate level will suffice.

**Required: Two semesters of one Laboratory Science (Biology, Chemistry, Geology, or Physics).

***Suggested Electives: Social Sciences (Economics, Government, Psychology, or Sociology), Geography, and Philosophy.

****Required: One year of Mathematics above Mathematics 100.

Recommended High School Program — College Preparatory.

# MATHEMATICS-SCIENCE

## College Transfer Program

## Associate Degree / Two Years

The Mathematics-Science curriculum offers the first two years of a four-year program leading to a baccalaureate degree with concentration in either mathematics or science. This program will prepare you for advanced study in the fields of science or mathematics, whether it be for entry into industry, teaching, medicine, dentistry or related fields. There is an increasing demand for well-trained mathematicians in the computer field and the need for teachers of mathematics or science at all levels is critical. All students, whether concentrating in specific areas of mathematics or science, normally take similar courses of study the first two years and specialize during their junior and senior years.

FIRST SEMESTER

| *Course* | *Credits* |
|---|---|
| English 101 - English Composition | 3 |
| *Laboratory Science | 3-4 |
| **Mathematics | 3-4 |
| ***Electives | 6 |
| Physical Education 101 | 1 |
| | 16-18 |

SECOND SEMESTER

| *Course* | *Credits* |
|---|---|
| English 102 - English Composition | 3 |
| *Laboratory Science | 3-4 |
| **Mathematics | 3-4 |
| ***Electives | 6 |
| Physical Education 102 | 1 |
| | 16-18 |

THIRD SEMESTER

| *Course* | *Credits* |
|---|---|
| English 201 - History of English Literature | 3 |
| *Laboratory Science | 3-4 |
| **Mathematics | 3-4 |
| ***Elective | 3 |
| ****Elective | 3-4 |
| Physical Education 103 | 1 |
| | 16-19 |

FOURTH SEMESTER

| *Course* | *Credits* |
|---|---|
| English 202 - History of English Literature | 3 |
| *Laboratory Science | 3-4 |
| **Mathematics | 3-4 |
| ***Elective | 3 |
| ****Elective | 3-4 |
| Physical Education 104 | 1 |
| | 16-19 |

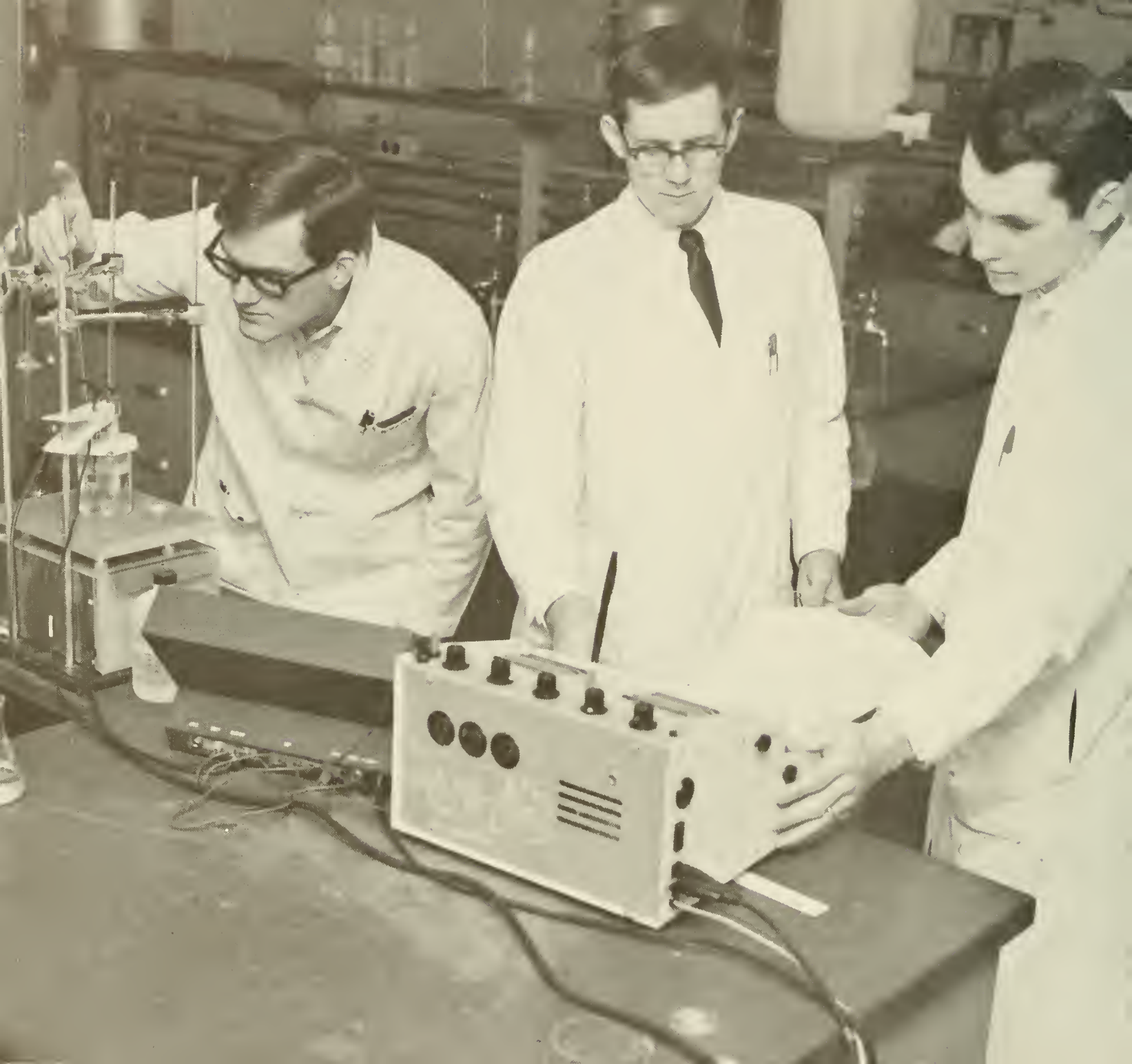
*Laboratory Sciences (Biology, Chemistry, Geology, or Physics).

**Mathematics (College Algebra, Trigonometry, Statistics, or Calculus).

***Suggested electives: Social Sciences (Economics, Government, History, Psychology, or Sociology), Geography, and Philosophy.

****This elective includes Mathematics, Science, or Foreign Languages (French, German, or Spanish).

Recommended High School Program: College Preparatory, which includes two years of Algebra, one year of Geometry, Biology, and Chemistry.



# ENGINEERING

## College Transfer Program

## Associate Degree / Two Years

This curriculum offers you the first two years of a program leading to a baccalaureate degree in one of the many areas of engineering practice. This program includes mathematics, chemistry, physics, English, basic engineering disciplines, and electives which will be helpful both in your career and in your social development. It is necessary for you to have a strong background in mathematics and science to follow this curriculum which is basic to many engineering fields: aeronautical, chemical, civil, electrical, industrial, sanitary, mechanical, and nuclear. It is not necessary that you choose a major area of concentration until you transfer to a four-year college.

FIRST SEMESTER

| *Course* | *Credits* |
|---|---|
| English 101 - English Composition | 3 |
| Mathematics 105 - Calculus I and Analytic Geometry | 4 |
| Physics 105 - General Physics | 4 |
| *Electives | 6 |
| Physical Education 101 | 1 |
| | 18 |

SECOND SEMESTER

| *Course* | *Credits* |
|---|---|
| English 102 - English Composition | 3 |
| Mathematics 106 - Calculus II and Analytic Geometry | 4 |
| Physics 106 - General Physics | 4 |
| Engineering 201 - Graphics | 3 |
| *Elective | 3 |
| Physical Education 102 | 1 |
| | 18 |

THIRD SEMESTER

| *Course* | *Credits* |
|---|---|
| Mathematics 205 - Calculus III and Analytic Geometry | 4 |
| Chemistry 103 - Advanced General Chemistry | 4 |
| **Engineering 200 - Statics | 3 |
| Engineering 250 - Computers and Engineering Analysis | 3 |
| *Elective | 3 |
| Physical Education 103 | 1 |
| | 18 |

FOURTH SEMESTER

| *Course* | *Credits* |
|---|---|
| Mathematics 215 - Differential Equations | 3 |
| Chemistry 104 - Advanced General Chemistry | 4 |
| **Engineering 210 - Dynamics | 3 |
| **Engineering 220 - Strength of Materials | 3 |
| **Engineering Electives | 3 |
| Physical Education 104 | 1 |
| | 17 |

*Suggested Electives: Social Sciences (Economics, Government, History, Psychology, or Sociology), Geography, and Philosophy.

**Second-year Engineering courses are not available for the academic year 1969-70. These courses will be available when engineering enrollment increases.

Recommended High School Program: College Preparatory, which includes Algebra, Geometry, Trigonometry, Chemistry, Physics, and advanced Mathematics.

# EDUCATION-SOCIAL WORK

## College Transfer Program

## Associate Degree / Two Years

This curriculum offers you the first two years of a four-year program leading to a baccalaureate degree with concentration in either Education or Social Work. In the four-year college to which you transfer, you may specialize in elementary or secondary teaching, school administration, guidance and counseling, and various areas of social work or related fields.

### FIRST SEMESTER

| *Course* | *Credits* |
|---|---|
| English 101 - English Composition | 3 |
| History 201 - History of the United States | 3 |
| *Mathematics 100 - Fundamentals of Mathematics | 3 |
| Psychology 101 - General Psychology | 3 |
| **Elective | 3 |
| Physical Education 101 | 1 |
| | 16 |

### SECOND SEMESTER

| *Course* | *Credits* |
|---|---|
| English 102 - English Composition | 3 |
| History 202 - History of the United States | 3 |
| *Mathematics 200 - Fundamentals of Mathematics | 3 |
| Sociology 101 - Introduction to Sociology | 3 |
| **Elective | 3 |
| Physical Education | 1 |
| | 16 |

### THIRD SEMESTER

| *Course* | *Credits* |
|---|---|
| English 201 - History of English Literature | 3 |
| ***Laboratory Science | 3-4 |
| Education 201 - Introduction to Education | 3 |
| Mathematics 203 - Elementary Statistics | 3 |
| ****Elective in a Social Science | 3 |
| Physical Education 103 | 1 |
| | 16-17 |

### FOURTH SEMESTER

| *Course* | *Credits* |
|---|---|
| English 202 - History of English Literature | 3 |
| ***Laboratory Science | 3-4 |
| Psychology 202 - Educational Psychology | 3 |
| ****Electives in Social Science | 6 |
| Physical Education 104 | 1 |
| | 16-17 |

*If qualified, you may take more advanced Mathematics courses, in lieu of Mathematics 100.

**Suggested electives: Geography or Philosophy.

***Required: Two semesters of one Laboratory Science (Biology, Chemistry, Geology, or Physics).

****Sociology courses are suggested to provide for the Social Work objectives. For Education students, other available Social Sciences are Economics or Government, and, in addition, for the third and fourth semesters, History and Psychology. For Education students wishing to teach foreign languages, French, German, or Spanish may be elected.

Recommended High School Program: College Preparatory.

# BUSINESS ADMINISTRATION

## College Transfer Program

## Associate Degree / Two Years

The Business Administration curriculum offers you the first two years of a four-year program leading to a baccalaureate degree in Business Administration. This basic curriculum is designed to give you an educational foundation that will allow you to perform and grow in the dynamic and complex field of business. Specialized business oriented courses and a significant number of liberal arts courses provide the necessary background for future study in business administration at a four-year college. Possible major fields open to you after transfer include accounting, economics, finance, foreign commerce, economic geography, industrial management, personnel management, insurance, marketing and real estate.

FIRST SEMESTER

| *Course* | *Credits* |
|---|---|
| English 101 - English Composition | 3 |
| History 201 - History of the United States | 3 |
| *Mathematics or **Laboratory Science | 3-4 |
| Economics 201 - Principles of Economics | 3 |
| ***Elective | 3 |
| Physical Education 101 | 1 |
| | 16-17 |

SECOND SEMESTER

| *Course* | *Credits* |
|---|---|
| English 102 - English Composition | 3 |
| History 202 - History of the United States | 3 |
| *Mathematics or **Laboratory Science | 3-4 |
| Economics 202 - Economic Analysis | 3 |
| ***Elective | 3 |
| Physical Education 102 | 1 |
| | 16-17 |

THIRD SEMESTER

| *Course* | *Credits* |
|---|---|
| English 201 - History of English Literature | 3 |
| Mathematics 201 - Statistical Analysis | 3 |
| Business Administration 250 - Business Law I | 3 |
| Business Administration 205 - Automatic Data Processing | 3 |
| Business Administration 201 - Principles of Accounting | 3 |
| Physical Education 103 | 1 |
| | 16 |

FOURTH SEMESTER

| *Course* | *Credits* |
|---|---|
| English 202 - History of English Literature | 3 |
| Business Administration 251 - Business Law II | 3 |
| ***Electives | 6 |
| Business Administration 202 - Principles of Accounting | 3 |
| Physical Education 104 | 1 |
| | 16 |

*You should consult with the Chairman of the Mathematics Department to determine the appropriate course in which to enroll. If your mathematics background is determined to be strong, you may select the Laboratory Science option.

**Required: Two semesters of one Laboratory Science (Biology, Chemistry, Geology, or Physics).

***Suggested Electives: Social Sciences (Economics, Government, History, Psychology, or Sociology), Geography, and Philosophy.

Recommended High School Program: College Preparatory.

# SCHOOL OF LIBERAL ARTS AND SCIENCES / Chairmen

BIOLOGY, CHEMISTRY, AND PHYSICS
*RONALD E. THOMPSON, Chairman*

ENGLISH, SPEECH, AND DRAMA
*HUGH M. MACMULLAN, Chairman*

FRENCH, GERMAN, AND SPANISH
*FREDERICK B. SHARAR, Chairman*

GEOLOGY AND GEOGRAPHY
*RALPH L. BOYERS, Chairman*

MATHEMATICS
*ROGER E. DAVIS, Acting Chairman*

PHYSICAL EDUCATION
*THOMAS E. VARGO, Chairman and Director of Atheletics*

SOCIOLOGY, PSYCHOLOGY, HISTORY, GOVERNMENT, AND ECONOMICS
*PAUL FENG, Chairman*

NUMBERING SYSTEM - Courses numbered in the 100 series are generally taken in your first year; in the 200 series, your second year.

"I" indicates the first semester; "II" the second semester. The number after the semicolon shows the number of credits you will receive for each course. The first number in the parenthesis indicates the number of hours you will spend in class each week; the second number applies to the number of hours in each week devoted to work in the laboratory, field trips, etc.

Example: Art History 101 - Appreciation and Aesthetics I;3 or II;3 (3-0)

The courses offered in the College Transfer Programs are arranged alphabetically by subject areas, and the descriptions include prerequisites.

# COURSE DESCRIPTIONS / *college transfer programs*

## *ART*

The art study program is designed to develop your appreciation of works of art as a lasting enrichment to your life. Through such study you will experience the fine arts as a means of creative expression, you will better understand how art has mirrored man throughout history, and you will gain insight into the relationship between art and your other studies. You will begin to comprehend the importance of art in everyday living and the influence of art in the development of different cultures. You will be prepared for further artistic experiences as a continuing student or as an enlightened individual.

ART 101 — APPRECIATION AND AESTHETICS

Art history in which appreciation and aesthetic judgment of historic and contemporary art forms are goals. Understanding of the fine arts through critical analysis of selected works in architecture, painting, and sculpture allied with varied philosophical, cultural, inconographic, technical, and visual approaches. Particular emphasis given to historical, sociological, and formal approaches to the arts. I;3 or II;3 (3-0).

## BIOLOGY

Biology expresses the unity of the living world and man's place in it. The excitement and intellectual appeal of this science are represented by the deciphering of the genetic "code," the penetration into the unknown of the ocean, and the emergence of the orderly pattern of form, function, and behavior of organisms.

Courses in this department have been designed to meet a variety of vocational as well as intellectual objectives. They will provide you with the necessary scientific foundation if you are interested in such varied fields as laboratory technology, pharmaceutical sales, teaching, technical writing or editing, human or veterinary medicine, dentistry, biological or medical research, genetics, marine biology, physiology or molecular biology, medical illustration, technical librarianship, or nursing. Even if your major interest lies outside biology, these courses will have lasting cultural value.

BIOLOGY 100 – INTRODUCTION TO MODERN COLLEGE BIOLOGY

One-semester course to prepare students having weak science backgrounds for freshman biology. May also be elected by those interested in increasing awareness of topics in modern biology. Summer; No Credit.

BIOLOGY 101 AND 102 – GENERAL BIOLOGY

Fundamental processes of living organisms. Main concepts of biology are developed in logical sequence beginning with considerations of the chemical basis of life. Structure, functions, interrelationships, and evolution of organisms.
I;4 and II;4 (3-3).
*Prerequisite: For Biology 102, Biology 101 or permission of the instructor.*

BIOLOGY 201 – MICROBIOLOGY

Biology of microorganisms including bacteria, rickettsiae, viruses, fungi, protozoa, and helminths. Relationships between microorganisms and higher forms of life. I;4 (3-3).
*Prerequisites: Biology 101 and 102.*

BIOLOGY 202 – INVERTEBRATE ZOOLOGY

Morphology, taxonomy, physiology, and life histories of invertebrates. II;4 (3-3).
*Prerequisites: Biology 101 and 102.*

BIOLOGY 203 – GENERAL BOTANY

Introduction to plants, plant physiology, plant life cycles, and plant taxonomy. II;4 (3-3).
*Prerequisites: Biology 101 and 102.*

BIOLOGY 204 – AQUATIC BIOLOGY

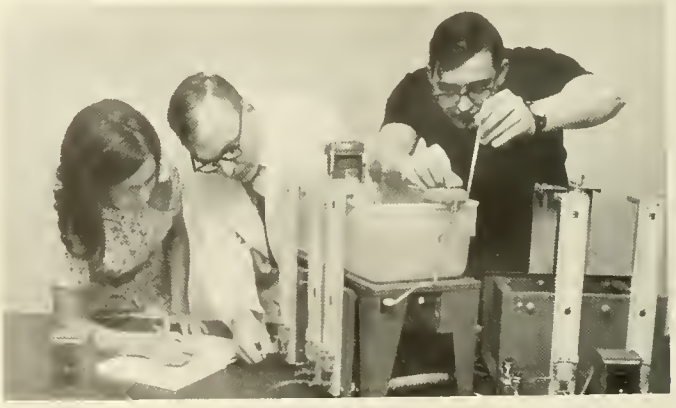
Basic characteristics and relationships of aquatic organisms and environment. II;4 or Summer; 4 (3-3).
*Prerequisites; Biology 101 and 102 and Chemistry 101 and 102.*

BIOLOGY 206 – VERTEBRATE ZOOLOGY

Life cycles, adaptations, ecology, taxonomic relationships, with major emphasis on physiology of the vertebrates. 11;4 (3-3).
*Prerequisite: Biology 101.*

BIOLOGY 290 – SPECIAL STUDIES IN BIOLOGY

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. I;1 or 3 or II;1 to 3.



## BUSINESS ADMINISTRATION

Two semesters of both accounting and business law will give you a firm background for your understanding of further specialized courses in a business curriculum. Your practice with data processing equipment will add valuable experience to your classroom work and will provide you with a balance between theory and experience which will play an integral part in your total education. A major aim of these courses is to provide you with an understanding of the complex relationships existing within business organizations.

BUSINESS ADMINISTRATION 201 AND 202 — PRINCIPLES OF ACCOUNTING

Fundamental theory. Current concepts and standards of recording, classifying, summarizing and interpreting business activity through accounting. Practice in analysis and interpretation of financial position of business organization. I;3 and II;3 (3-3).
*Prerequisite: For Business Administration 202, Business Administration 201.*

BUSINESS ADMINISTRATION 205 — AUTOMATIC DATA PROCESSING

Introduction to automatic data processing: concepts and operation of unit record equipment; basic computer systems and programming; data files and case studies application. I;3 (3-1).

BUSINESS ADMINISTRATION 250 — BUSINESS LAW I

Survey of English and American business law, with special attention to contracts and including an introduction to property, crimes, and torts. I;3 (3-0).

BUSINESS ADMINISTRATION 251 — BUSINESS LAW II

Laws pertaining to real and personal property, landlord and tenant, sales of goods, and negotiable instruments. II;3 (3-0).

## CHEMISTRY

Chemistry is the study of matter and energy and the changes that matter undergoes. A knowledge of the material world around you is important no matter what your major is. An understanding of chemistry is essential for careers in the areas of medicine, biology, engineering, home economics, geology, meteorology, and astronomy and is useful for careers in such areas as industry, law, architecture, and geography.

CHEMISTRY 100 — INTRODUCTION TO CHEMISTRY

Intended for students who have not studied chemistry in high school and for those needing additional study before attempting college chemistry: basic principles and theories. I or II; No credit.

CHEMISTRY 101 — GENERAL CHEMISTRY I

Introductory study of the fundamental laws and theories of chemistry. Topics include atomic structure, bonding, stoichiometry, physical states of matter and changes of state, solutions, kinetics and equilibrium, electrochemistry and nuclear chemistry. Some time may be devoted to introductory organic chemistry. Course is intended for non-science students. Science majors should take Chemistry 103, but may take Chemistry 101 to strengthen their background. 1;4 (3-3).

CHEMISTRY 102 — GENERAL CHEMISTRY II

Major emphasis is on introductory treatment of structures and characteristic reactions of major classes of organic compounds. Time may be devoted to elementary biochemistry. Course is intended for non-science majors, but may be taken by science majors to strengthen their background. II;4 (3-3).
*Prerequisites: Chemistry 101, or one year of high school chemistry and permission of the instructor.*

CHEMISTRY 103 AND 104 — ADVANCED GENERAL CHEMISTRY

Study of fundamental concepts of chemistry. Topics listed under Chemistry 101 and others covered in more depth such as thermodynamics and molecular orbital theory. Course is recommended for all science majors. 1;4 and 11;4 (3-3).
*Prerequisites: Chemistry 101, or one year of high school chemistry and permission of instructor; high school algebra. For 104, Chemistry 103.*

CHEMISTRY 201 – QUANTITATIVE ANALYSIS

Theory and practice of classical methods of gravimetric and volumetric analysis. Some instrumentation employed. Emphasis upon accurate lab work and problem solving. I;4 (2-6).
*Prerequisites: One year of general college chemistry or one semester of college chemistry and permission of the instructor.*

CHEMISTRY 203 AND 204 – ORGANIC CHEMISTRY

Principal classes of organic compounds and reactions, with emphasis on structure, reactivity, and reaction mechanisms. I;4 and II;4 (3-0).
*Prerequisites: Chemistry 103 and 104. For Chemistry 204, Chemistry 203.*

CHEMISTRY 205 – ADVANCED INORGANIC CHEMISTRY

Modern theories of inorganic chemistry. Introductory quantum mechanics, Lewis structures, molecular geometry, molecular orbital theory, transition metal complexes and crystal field theory, electron-deficient molecules, periodic properties of elements. II;4 (3-3).
*Prerequisites: Chemistry 103 and 104 or equivalent; knowledge of elementary differential and integral calculus.*

CHEMISTRY 290 AND 291 – SPECIAL TOPICS IN CHEMISTRY

A flexible course designed to meet special needs or interests of chemistry students. Lectures on advanced material and/or special laboratory projects. I;2 and II;2.
*Prerequisites: One year of general college chemistry and permission of the instructor.*

## ECONOMICS

Economics investigates conditions and laws affecting production, distribution, and consumption of wealth. You need a strong background in economics if your career lies in law, business, industry, or teaching social studies.

ECONOMICS 201 – PRINCIPLES OF ECONOMICS

An introductory course dealing primarily with the United States economy, its make-up and problems. 1;3 (3-0).

ECONOMICS 202 – ECONOMIC ANALYSIS

A study of the theory of the firm, and analysis of economic problems involved in public policy decisions. Required of students following the business administration curriculum, or intending to major in economics. 11;3 (3-0).
*Prerequisite: Economics 201.*

ECONOMICS 203 – INTERNATIONAL ECONOMICS

Study of current problems in international trade and finance with emphasis on the gold question and the balance of payments. 1;3 (3-0).
*Prerequisite: Economics 202, or permission of the instructor.*

ECONOMICS 204 – COMPARATIVE ECONOMIC SYSTEMS

Analysis of current economic systems, their theory and practice. 11;3 (3-0).
*Prerequisite: Economics 201, or permission of the instructor.*

ECONOMICS 205 – PERSONNEL RELATIONS

Concepts and cases dealing with human beings in industry and business. 1;3 or 11;3 (3-0).

ECONOMICS 290 – SPECIAL STUDIES IN ECONOMICS

A flexible course designed to meet special needs of economic students. 1 or 11; 1 to 3 (3-0).
*Prerequisite: Permission of the instructor.*

## EDUCATION

Courses in education are designed for students who intend to teach in public schools. These courses are basic requirements if you intend to major in education.

EDUCATION 102 – CHILDREN'S AND YOUNG ADULTS' LITERATURE

Comprehensive survey of children's and young adults' literature. Designed to provide a basic knowledge and understanding of authors, illustrators, and literary forms as background for work in a public area. I;3 (3-0).

EDUCATION 201 – INTRODUCTION TO EDUCATION

Foundations of education: historical, economic, philosophical, and social. Their implications for present-day education. I;3 or II;3 (3-0).

## *ENGINEERING*

Most of the following courses are basic to all types of engineering and are required at The Williamsport Area Community College for all engineering students. However, courses 160, 230, and 240 are for civil, mechanical, and electrical engineering, in that order; you may elect one of these during your fourth semester.

ENGINEERING 201 – GRAPHICS

Spatial relationships of points, lines, planes and solids, with engineering applications; vectors; graphical mathematics; introduction to nomography. I;3 (2-3).
*Prerequisite: One semester of Engineering Drawing.*

ENGINEERING 160 – SURVEYING

Theory of plane and topographic surveying, horizontal and vertical curves, and earthwork as related to civil engineering projects. I;3 or II;3 (2-3).
*Prerequisite: One semester in Engineering Drawing.*

ENGINEERING 200 – STATICS

Vectoral mechanics, force systems, friction, centroids and moments of inertia. I;3 (3-0).
*Prerequisite: Mathematics 205.*

ENGINEERING 210 – DYNAMICS

Motion of a particle, relative motion, kinetics of translation, rotation and plane motion. II;3 (3-0).
*Prerequisite: Engineering 200.*

ENGINEERING 220 – STRENGTH OF MATERIALS

Axial stress and strain torsion, stresses in beams, elastic curves and deflections of beams, combined stress, columns. II,3 (3-0).
*Prerequisite: Mathematics 205.*

ENGINEERING 230 – THERMODYNAMICS

Basic thermodynamics concepts and definitions, first and second law of thermodynamics, properties of pure substances. I;3 or II;3 (3-0).
*Prerequisites: Mathematics 205, Chemistry 101 and 102, and Physics 101 and 102.*

ENGINEERING 240 – ELECTRICAL CIRCUITS

Basic electrical quantities, resistance, inductance and capacitance, including their responses to constant, sinusoidal and general driving functions, elementary network analysis. I;3 or II;3 (3-0).
*Prerequisites: Physics 101 and 102, and Mathematics 205.*

ENGINEERING 250 – COMPUTERS AND ENGINEERING ANALYSIS

Study of basic computer systems, structure of computer programs and numerical methods in solution of mathematical engineering and related problems. Development of computional algorithms, construction of logic charts and heuristic programming concepts. I;3 or II;3 (3-1).
*Prerequisite: Mathematics 205.*

## *ENGLISH AND SPEECH*

The skills you acquire in writing and speaking will be essential to your success in further college work and chief among the talents you will use as an educated person. Survey courses in literature will bring you an understanding of the value of that art as a means of creative expression. As in the remainder of this catalog, courses numbered with three digits are designed to be transferred to a four-year college; those with two digits are designed for the Applied Arts and Sciences Career Programs and may or may not be transferable.

ENGLISH 01 AND 02 – COMMUNICATIONS

Practice in written composition through examination of literary forms: the essay and the short story, and studies in the English language. Development of speech skills through individual and group presentations of related material. Second Semester: Further practice in oral and written composition. Examination of drama and the film. Studies in the mass media. I or II; No Credit (48-0).
*Prerequisite: Sequential.*

ENGLISH 11 AND 12 – LANGUAGE AND COMPOSITION

Principles of expository writing through examination of literary forms: the essay and the short story, and study of the history of the English language. Development of speech skills through individual and group presentations of related material. Second Semester: Writing of expository and critical essays. Further development of speech skills. Examination of poetry, drama, and the film. Studies of aspects of the English language. Principles of research. I;3 and II;3 (3-0).
*Prerequisite: Sequential.*

ENGLISH 13 – TECHNICAL WRITING

Intensive survey of technical writing with practice in preparing reports for business and industry. I;3 or II;3 (3-0).
*Prerequisites: English 11 and 12 or Equivalent.*

ENGLISH 14 – SPEECH

Practice in group discussion, critical listening, parliamentary procedure, oral reporting. I,2 or II;2 (3-0).

ENGLISH 100 – BASIC ENGLISH

Intensive review of English grammar and the basic principles of composition. I or II; No Credit.

ENGLISH 101 AND 102 – ENGLISH COMPOSITION

Basic composition involving language structure, rhetorical principles, orderly, clear writing, and readings in expository prose. Second semester includes the study of four American novels. I;3 and II;3 (3-0).
*Prerequisite: For English 102, English 101.*

ENGLISH 105 – SHORT STORY WRITING

Development of skills in writing imaginative prose and in presenting short stories for class criticism and review.
I;3 or II;3 (3-0).

ENGLISH 201 AND 202 – HISTORY OF ENGLISH LITERATURE

The works of major English writers from Chaucer to the beginning of the Romantic Period with emphasis upon intellectual, political and literary developments. I;3 and II;3 (3-0).
*Prerequisite: English 102. Second semester includes study of representative authors from Wordsworth to the present.*
*Prerequisite: For English 202, English 201.*

ENGLISH 211 – FUNDAMENTALS OF SPEECH

Basic physiology of speech. Oral reading; composition and delivery of expository speeches for different types of audiences. I;3 or II;3 (3-0).

ENGLISH 212 – SPEECH – DEBATING

Group thinking and debate as methods of solving contemporary problems. Case histories provide materials for analysis, interpretation, and evaluation. Preparation for intercollegiate debating. I;2 or II;2 (2-0).

ENGLISH 250 AND 251 – WORLD LITERATURE

The reading of literature expressing western man's belief in the paramount importance of the individual. Second semester includes survey of representative works of continental Europe to the present. I;3 and II;3 (3-0).

ENGLISH 290 – SPECIAL STUDIES IN ENGLISH

Individual guidance in advanced studies. Admission by permission of the instructor. I;1 to 3 or II;1 to 3 (1 to 3-0).

## *FRENCH*

The object of these courses is to give you a working knowledge of the French language and to provide you with a tool for the study of higher level French courses in the college or university to which you transfer.

FRENCH 101 AND 102 — BEGINNING FRENCH

Basic grammar and language structure. Comprehension, speaking, and reading, with particular regard to pronunciation and accent. I;4 and II;4 (4-0)
*Prerequisite: For French 102, French 101.*

FRENCH 201 AND 202 — INTERMEDIATE FRENCH

Review of grammar, with readings on intermediate level. Increased command of the language. I;3 and II;3 (3-0)
*Prerequisites: French 101 and 102. For French 202, French 201.*

## *GEOGRAPHY*

Studies in geography aim to develop your knowledge and appreciation of the physical and cultural aspects of man's habitat. Because a student does not usually achieve geographic literacy before reaching college, the college offers the following courses which include in-depth study for geography majors and prospective secondary teachers of the social sciences.

GEOGRAPHY 101 — PHYSICAL GEOGRAPHY

Introduction to topographic maps, landforms, weather elements, climates, soils, and vegetation. I;3 (3-0).

GEOGRAPHY 102 — GEOGRAPHY OF THE UNITED STATES

Systematic geographic landforms, climates, vegetation, soils, population, and economics of the United States. II;3 (3-0).
*Prerequisite: Geography 101 or permission of the instructor.*

GEOGRAPHY 103 — CULTURAL GEOGRAPHY

Past and present reasons for location of current cultural societies of the world. I;3 (3-0).
*Prerequisite: Geography 101 or permission of the instructor.*

GEOGRAPHY 104 — SOUTH AMERICA AND ITS PEOPLE

Factors influencing the localization of populace of South America. II;3 (3-0).

GEOGRAPHY 201 — POLITICAL GEOGRAPHY

Parameters that combine to determine present world political geographies. I;3 (3-0).

GEOGRAPHY 290 — SPECIAL STUDIES IN GEOGRAPHY

Special attention to particular abilities and interests of students. Individual guidance in geographic studies. Admission by permission of the instructor. I;1 to 3 or II;1 to 3 (1 to 3-0).

## *GEOLOGY*

Geology is the science that deals with the study of the earth as well as celestial bodies. The profession of geology, which consists of some 22 interdependent areas, is concerned with the study and interpretation of the geologic agents and physical and chemical processes that act independently and collectively to change the earth's configuration. Some major areas of current geologic research are oceanography, astrogeology, landscapes, mineral deposits, volcanoes, and glaciers.

The Department of Geology promotes insight into the various geologic provinces and thus provides acquaintance with the study of geology. When possible, seminars replace lectures.

GEOLOGY 101 AND 102 – ELEMENTS OF GEOLOGY AND HISTORICAL GEOLOGY

Designed as a two semester course. The first semester (Geology 101) includes the basic study of igneous, metamorphic, and sedimentary rocks; geomorphology; structural geology; oceanography; glaciation; volcanoes; and groundwater. Field trips supplement classroom discussion where applicable. The accompanying laboratory sessions are designed for independent study to introduce the student to research. The second semester (Geology 102) is primarily a group field project with a secondary emphasis on seminar classroom discussions. The field work consists of the geologic interpretation of an outcrop of sedimentary rocks. I;3 (2-3) II;3 (2-3).
*Prerequisite: For Geology 102, Geology 101.*

GEOLOGY 103 – PENNSYLVANIA GEOLOGY

Stratigraphy, structure, and geomorphology of Pennsylvania. Practicum covers geologic and topographic maps of Pennsylvania; with field trips to complement the classroom sessions. I;3 (3-0).
*Prerequisite: Geology 101.*

GEOLOGY 104 – INTRODUCTORY MINERALOGY

Basic principles of crystallography and mineralogy; crystal structure, properties, occurrences, uses, identification and classification of minerals. The laboratory sessions are continuations of the classroom sessions and consists of megascopic and microscopic mineral identification. I;3 (2-3).
*Prerequisite: Chemistry 100.*

GEOLOGY 202 – PRINCIPLES OF GEOMORPHOLOGY

Introduction to the geomorphic interpretation of the earth's landscapes. Field trips supplement the seminars. II;3 (2-3).
*Prerequisite: Geology 102 or permission of the instructor.*

GEOLOGY 204 – GEOHYDROLOGY

Theory of ground water flow, distribution, and occurrence of ground water. II;3 (3-0).
*Prerequisites: Geology 101, Mathematics 106, and Chemistry 102.*

GEOLOGY 290 – SPECIAL STUDIES IN GEOLOGY

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor.
I;1 to 4 or II;1 to 4 (Laboratory as required).

## GERMAN

The courses in the German language are designed to provide a working knowledge of sufficient quality to enable you to enter higher level German courses in the college or university to which you will transfer.

GERMAN 101 AND 102 – BEGINNING GERMAN

Basic grammar and language structure. Comprehension, speaking and reading, with particular regard to pronunciation and accent. I;4 and II;4 (4-0).
*Prerequisite: For German 102, German 101.*

GERMAN 201 AND 202 – INTERMEDIATE GERMAN

Review of grammar, with readings on intermediate level. Increased command of the language. I;3 and II;3 (3-0).
*Prerequisites: German 101 and 102. For German 202, German 201.*

## GOVERNMENT

The government courses are basically designed to offer you explanation and discussion of the governmental process, voting behavior, and the power structure of a society. Effort is devoted to a systematic examination of the governmental process in the United States and in other nations. These courses are not only concerned with formal governmental structure, but also with political behavior and political culture in which governmental institutions operate.

GOVERNMENT 201 – AMERICAN GOVERNMENT – NATIONAL

Federal government, its powers and organization. Functions of legislative, executive and judicial branches. Our federal system as it has developed. I;3 or II;3 (3-0).

GOVERNMENT 202 – STATE AND LOCAL GOVERNMENT

State and local governmental institutions, their functions and responsibilities; intergovernmental relations. I;3 or II;3 (3-0).

GOVERNMENT 205 AND 206 – COMPARATIVE GOVERNMENT

Political systems of Great Britain, France, the Soviet Union, and Germany; constitutions, parties, electoral methods, legislatures, executive, and judicial systems. Theory and practice of Democracy and Totalitarianism. Social-economic forces and political systems. I;3 and II;3 (3-0).
*Prerequisite: Permission of the instructor.*

GOVERNMENT 290 – SPECIAL STUDIES IN GOVERNMENT

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. I;1 to 3 or II;1 to 3 (1 to 3-0).

## *HISTORY*

The history curriculum provides you, by means of a systematic approach to historical data, an expanding reference to examination and appreciation of the cultural traditions of the past. The establishment of critical standards for the evaluation and comprehension of the contemporary world and its problems is one of the primary goals of the department.

HISTORY 101 AND 102 – WORLD HISTORY

Survey and analysis of major intellectual and political developments of world civilization from ancient times until the 18th century. Second semester includes 18th century to present. I;3 and II;3 (3-0).

HISTORY 201 AND 202 – HISTORY OF THE UNITED STATES

Political, economic, and social development of the United States from pre-colonial times to, and including, the Civil War period. Second semester covers 1865 to present. I;3 and II;3 (3-0).

HISTORY 211 – EARLY MODERN EUROPEAN

From 1500-1815. Europe's cultural, religious and econon expansion. Emergence of modern state system internatio and colonial rivalry, the Enlightenment, the French R lution, Napoleon and Congress of Vienna. I,3 or II;3 (3

HISTORY 212 – TWENTIETH CENTURY EUROPEAN

Major events from the First World War to the present wit emphasis on industrialization, nationalism, social upheava totalitarianism, anticolonialism, and war. I;3 or II;3 (3-0

HISTORY 290 – SPECIAL STUDIES IN HISTORY

Individual guidance in advanced studies. Admission by p mission of the instructor. I;1 to 3 or II;1 to 3 (1 to 3-

## *MATHEMATICS*

The mathematics courses have been designed to broaden your concept of mathematics as a universa language of creative and critical thought. They have also been planned to meet your needs if you intend to teach in the public schools, to do advanced work in mathematics, or to pursue careers which will rely substantially upon mathematics.

MATHEMATICS 100 FUNDAMENTALS OF MATHEMATICS

Fundamental properties of arithmetic, algebra, and set notation including first and second degree equations and inequations. I;3, II;3 or Summer, 3 (3-0).

MATHEMATICS 200 – FUNDAMENTALS OF MATHEMATICS

Fundamental properties of logic, probability, trigonomet and descriptive statistics. I;3 or II;3 (3-0).
*Prerequisite: Mathematics 100 or three units of high schc mathematics.*

MATHEMATICS 101 – COLLEGE ALGEBRA

Fundamentals of algebra; linear functions, exponents and radicals, quadratic equations, ratio and proportion, probability, mathematical induction, binomial theorem, inequalities, complex numbers, theory of equations and determinants.
I;3 or II;3 (3-0).
*Prerequisite: Two units of high school mathematics.*

MATHEMATICS 102 – COLLEGE TRIGONOMETRY

Trigonometric functions, use of tables, solution of right and oblique triangles, radian measure, fundamental identities, graphical representation of trigonometric functions, inverse functions and solution of equations. II;3 (3-0).
*Prerequisite: Mathematics 101.*

MATHEMATICS 105 – CALCULUS I AND ANALYTIC GEOMETRY

Inequalities, relations, functions, graphs, families of lines and circles, limits, continuity, derivatives of algebraic functions, related rates, maxima and minima, curve sketching differentials. I;4 (4-0).

MATHEMATICS 106 – CALCULUS II AND ANALYTIC GEOMETRY

Conics, the definite integral, transcendental functions, parametric equations, arc length, polar coordinates, vectors in the plane, formulas and methods of integration, applications. II;4 (4-0).
*Prerequisite: Mathematics 105.*

MATHEMATICS 201 – STATISTICAL ANALYSIS

Basic concepts of probability and introduction to statistical inference. Applications of binomial distribution, normal distribution, linear regression and correlation. II;3 (3-0).
*Prerequisite: Three units of high school mathematics.*

MATHEMATICS 202 – STATISTICAL ANALYSIS

Presentation of statistical techniques and physical situations to which they apply. Student's T, Chi-Square, and F tests. Linear models for experimental situations; multiple regression and correlation. I;3 (3-0).
*Prerequisite: Mathematics 201.*

MATHEMATICS 203 – ELEMENTARY STATISTICS

Descriptive statistics, frequency distributions, binomial and normal distributions, Central Limit Theorem, descision making tests, Chi-Square, regression and correlation.
Summer, 3 (3-0).
*Prerequisite: Three units of high school mathematics or Mathematics 200.*

MATHEMATICS 205 – CALCULUS III AND ANALYTIC GEOMETRY

Solid analytic geometry, vectors in three space, infinite series, partial differentiation, multiple integration, applications.
I;4 (4-0).
*Prerequisite: Mathematics 106.*

MATHEMATICS 210 – TOPICS IN MODERN GEOMETRY

Topics from synthetic geometry, affine and projective geometry, algebraic geometry, non-Euclidean geometry, hyperbolic plane geometry. Admission by permission of the instructor.
Summer: 3 (3-0).

MATHEMATICS 215 – DIFFERENTIAL EQUATIONS

Introductory study with applications to physics, chemistry, and engineering. II;3 (3-0).
*Prerequisite: Mathematics 205.*

MATHEMATICS 220 – MATRIX ALGEBRA

Matrices, determinants, inverse of a matrix, rank and equivalence, linear equations and linear dependence vector spaces, linear transformations, characteristic equation of a matrix; bilinear, quadratic, and Hermitian forms. Admission by permission of the instructor. I;3 (3-0).

MATHEMATICS 221 – INTRODUCTION TO MODERN ALGEBRA

Integers, basic properties; axiomatic approach to algebra, groups, rings, domains, ideals, fields, and modules. Admission by permission of instructor. II;3 (3-0).

MATHEMATICS 222 – INTRODUCTION TO MODERN ALGEBRA

Linear equations, vector spaces, linear transformations, polynomials, determinants, invariant direct-sum decompositions, rational and Jordan forms, inner product spaces, bilinear forms. I;3 (3-0).
*Prerequisite: Mathematics 221.*

MATHEMATICS 230 – PROBABILITY

Introduction to the mathematical theory of probability for the student in biological sciences, social sciences and business administration. Instruction in modern topics as part of early college mathematics. Use of mathematical models to interpret the physical phenomena and to predict the outcomes of related experiments. I;3 (3-0).
*Prerequisite: Mathematics 101 or Mathematics 200.*

MATHEMATICS 290 – SPECIAL STUDIES IN MATHEMATICS

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. I;1 to 3 or II;1 to 3 (1 to 3-0).

## *MUSIC*

If you have musical talent, WACC will arrange for private lessons for your development of that talent and give you college credits for that study. Development of creativity should be one of the goals of your education at WACC.

MUSIC 200 OR 201 – APPLIED MUSIC IN AREAS OF PIANO, ORGAN, AND VOICE

Private instruction in piano, organ, and voice. Weekly lessons. Concentration upon solid technical work and trouble shooting of specific problems. Sight reading and the exploration of new repertoire are stressed. Instruction is flexible to accommodate the requirements of the individual student at every level of accomplishment. By appointment. Special fee. I;1 or II;2 (2-0).

MUSIC 202 OR 203 – APPLIED MUSIC IN AREAS OF PIANO, ORGAN, AND VOICE

Continuation of Music 200 or 201. By appointment. Special fee. I;2 or II;2 (2-0).

MUSIC 204 OR 205 – MUSIC THEORY, SIGHT SINGING, AND COMPOSITION

Private instruction in technical areas of music theory, sight singing, and composition. By appointment. Special fee. I; 2 or II; 2 (2-0).

MUSIC 206 OR 207 – MUSIC THEORY, SIGHT SINGING, AND COMPOSITION

Continuation of Music 204 or 205. By appointment. Special fee. I;2 or II;2 (2-0).

## *PHILOSOPHY*

Philosophy is literally the "love of wisdom" and actually the science which investigates the systems man has devised for looking at reality and human nature and conduct. The aim of philosophy courses is to aid you in forming your personal philosophy and to help you to understand the thought and behavior of others, past and present.

PHILOSOPHY 101 – INTRODUCTION TO PHILOSOPHICAL ANALYSIS

Investigation of major perennial problems in philosophy: Meaning and Truth, Perception and External world; God, Mind and Body. I;3 or II; 3 (3-0).

PHILOSOPHY 102 – ETHICS AND POLITICAL PHILOSOPHY

Status of deontological language, free will and responsibility, major issues in contemporary political philosophy. II;3 (3-0).

PHILOSOPHY 201 – SYMBOLIC LOGIC

Principles of valid deductive reasoning developed in formal manner, consistency and completeness, axiomatic structures. I;3 or II;3 (3-0).
*Prerequisites: Philosophy 101, and Mathematics 100.*

## *PHYSICAL EDUCATION*

Physical Education is required of both men and women during each semester. All new students are required to submit a medical report before registering. The Physical Education and Health Education requirements may be waived with permission of the Dean if a student has been in the Armed Services for at least one year of active duty or if the Dean determines that he should be excused because of age or physical condition.

COURSES FOR MEN

PHYSICAL EDUCATION 101A – PHYSICAL EDUCATION

One period of swimming instruction and one period of physical activities each week including volleyball, basketball, and weight training. I;1 (2-0).

PHYSICAL EDUCATION 102A – PERSONAL AND COMMUNITY HEALTH

Up-to-date information concerning personal and community health problems of the college student of today. II;2 (2-0).

PHYSICAL EDUCATION 103A – PHYSICAL EDUCATION

Two periods of physical activities each week including wrestling, gymnastics, volleyball, basketball, weight training, and conditioning exercises. I;1 (2-0).

PHYSICAL EDUCATION 104A – PHYSICAL EDUCATION

Two periods of instruction and participation in physical education each week including the life-time activities of bowling, badminton, tennis and golf. II;1 (2-0).

COURSES FOR WOMEN

PHYSICAL EDUCATION 101B – PHYSICAL EDUCATION

One period of swimming instruction and one period of physical activities each week including volleyball, basketball and modern dance. I;1 (2-0).

PHYSICAL EDUCATION 102B – PERSONAL AND COMMUNITY HEALTH

Up-to-date information concerning personal and community health problems of the college student of today. II;2 (2-0).

PHYSICAL EDUCATION 103B – PHYSICAL EDUCATION

Two periods of physical activities each week including gymnastics, volleyball, basketball, and conditioning exercises. I;1 (2-0).

PHYSICAL EDUCATION 104B – PHYSICAL EDUCATION

Two periods of instruction and participation in physical education each week including the life-time activities of bowling, badminton, tennis, and golf. II;1 (2-0).

## *PHYSICS*

Physics is the science of inanimate matter and motion. Your study of physics will increase your understanding of the basic laws of nature as they relate to our physical environment and will create in you an appreciation of the possible extent of our knowledge of the physical world. Through your laboratory work you will become acquainted with experimental techniques and tools, and you will gain experience in interpreting and communicating experimental results.

PHYSICS 101 AND 102 – INTRODUCTORY PHYSICS

Qualitative course suitable for college students interested in physical science. Includes conventional areas of mechanics, sound and heat. Second semester covers light, electricity, electronics, atomic physics, and nuclear physics.
I;4 and II;4 (3-3).
*Prerequisites: For Physics 101, working knowledge of high school algebra and trigonometry. For Physics 102, Physics 101.*

PHYSICS 105 AND 106 – GENERAL PHYSICS

Quantitative course in mechanics, heat and sound designed for college students in science and engineering so they may understand important principles that are the foundations of further work in science and technology. Differential and integral calculus methods are employed whenever they are more direct and natural than numerical and algebraic methods. Second semester covers optics, electricity, and magnetism.
I;4 and II;4 (3-3).
*Prerequisite: For Physics 106, Physics 105.*
*Corequisite: For Physics 105, Mathematics 105.*
*Corequisite: For Physics 106, Mathematics 106.*

PHYSICS 210 – MECHANICS

Intermediate course in kinematics and dynamics. Differential and integral calculus are used extensively in derivations and problems. I;4 (3-3).
*Prerequisites: Physics 105 and 106.*
*Corequisite: Mathematics 215.*

PHYSICS 220 – MODERN PHYSICS

Atomic and nuclear physics including structures of atom and nucleus, radioactivity; fission and fusion; relativity; and the periodic table of elements. II;4 (3-3).
*Prerequisites: Physics 105 and 106.*
*Corequisite: Mathematics 215.*

## *PSYCHOLOGY*

Psychology is the study of human behavior with emphasis on better understanding and prediction of human behavior. Discussion will concentrate on personality factors, theories of learning, motivation, emotion, thinking, intelligence, maturation, perception, and the application of psychological findings and methods in areas such as business and industry, medicine, mental hygiene, law, salesmanship, teaching, and vocational planning.

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY

Introduction to the science of human behavior. I;3 or II;3 (3-0).

PSYCHOLOGY 202 – EDUCATIONAL PSYCHOLOGY

Psychological principles and concepts applied to learning. Individual differences, motivation and emotion. I;3 or II;3 (3-0).
*Prerequisite: Psychology 101 or admission by permission of the instructor.*

PSYCHOLOGY 205 – ABNORMAL PSYCHOLOGY

Principal forms of mental and emotional disorders with emphasis upon their causes, symptoms, and course of treatment. Goal to study normal behavior by examining such behavior in distortion or in exaggeration. Admission by permission of the instructor. II;3 (3-0).
*Prerequisite: Permission of the instructor.*

PSYCHOLOGY 210 – SOCIAL PSYCHOLOGY

Interaction of individuals in their several group relations, the contacts of harmony, and conflict within groups as well as between groups, group leadership and group controls, phenomena of imitation and suggestion. Admission by permission of the instructor. II;3 (3-0).
*Prerequisite: Permission of the instructor.*

PSYCHOLOGY 215 – DEVELOPMENTAL PSYCHOLOGY

Psychological development and change throughout the life span, with emphasis on basic principles of child and adolescent development, genetic and environmental influences on the course of physical, motor, intellectual, emotional, social, and personality development. I;3 (3-0).
*Prerequisites: Psychology 101 and 102.*

PSYCHOLOGY 290 – SPECIAL STUDIES IN PSYCHOLOGY

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. I;1 to 3 or II;1 to 3 (1 to 3-0).

## *SOCIOLOGY*

Sociology is the systematic study of human inter-relationships and of the products of these relationships. It seeks to understand the operation of human societies. A background in sociology is considered to be a valuable preparation for many professional and vocational activities, including business, law, the ministry, education, and social work.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY

Introduction to methods used by sociologists in studying how people live together. Dynamic relationships among society, culture and personality serve as focus for the course materials. I;3 or II;3 (3-0).

SOCIOLOGY 102 – GENERAL ANTHROPOLOGY

A survey of the physical and cultural evolution of man and society. Emphasis is placed upon the relationship of man's physical structure to behavior and also upon comparative descriptions of recent primitive societies. II;3 (3-0).

SOCIOLOGY 201 – MARRIAGE AND THE FAMILY

The history, structure, and functions of modern American family life, emphasizing dating, courtship, factors in marital adjustment, and the changing status of family members. I;3 (3-0).
*Prerequisite: Sociology 101.*

SOCIOLOGY 203 – INTRODUCTION TO SOCIAL WORK

Basic concepts on social welfare programs, social case work, and field work. Especially designed for students planning a career in social work. II;3 (3-0).
*Prerequisite: Sociology 101.*

SOCIOLOGY 205 – URBAN SOCIOLOGY

The concept of community is treated as it operates and affects individual and group behavior in rural, suburban, and urban settings. Emphasis is placed upon characteristic institutions and problems of modern city life. I;3 (3-0).
*Prerequisite: Sociology 101.*

SOCIOLOGY 207 – CRIMINOLOGY

The nature, genesis, and organization of criminal behavior is examined from both group and individual viewpoints. Juvenile delinquency and the treatment of crime are presented. II;3 (3-0).
*Prerequisite: Sociology 101.*

SOCIOLOGY 290 – SPECIAL STUDIES IN SOCIOLOGY

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. I,1 to 3 or II;1 to 3 (1 to 3-0).

## *SPANISH*

Courses in Spanish aim to develop the skills essential to understanding, reading and speaking the language and to provide you with the knowledge necessary to enroll in higher level courses in the college or university to which you will transfer.

SPANISH 101 AND 102 – BEGINNING SPANISH

Basic grammar and language structure. Comprehension, speaking and reading, with particular regard to pronunciation and accent. I;4 and II;4 (4-0).
*Prerequisite: For Spanish 102, Spanish 101.*

SPANISH 201 AND 202 – INTERMEDIATE SPANISH

Review of grammar, with exercises in the Spanish subjunctive. Readings on intermediate level. Increased command of the language. I;3 and II;3 (3-0).
*Prerequisites: Spanish 101 and 102. For Spanish 202, Spanish 201.*

SPANISH 211 AND 212 – ADVANCED SPANISH COMPOSITION AND CONVERSATION

Particular emphasis on writing Spanish. Short selections of Spanish literature as a basis for compositions and conversations. I;3 and II;3 (3-0).
*Prerequisites: Spanish 201 and 202. For Spanish 212, Spanish 211 or permission of the instructor.*

# COLLEGE SKILLS PROGRAM

## *Certificate Program / Non-Credit*

### IF

You haven't mastered basic study skills –
You can't express yourself effectively in oral or written communication –
You have difficulty with the new academic approaches to mathematics and science –

### YOU WILL BE TAUGHT HOW TO

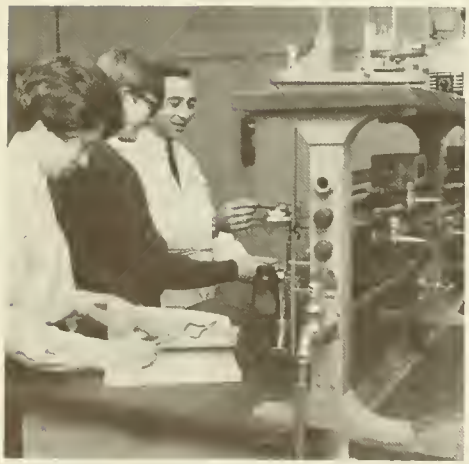
Study and use your time wisely –
Report accurately what you have read, what you have thought, and what conclusions you have drawn –
Master new approaches to mathematics and science –

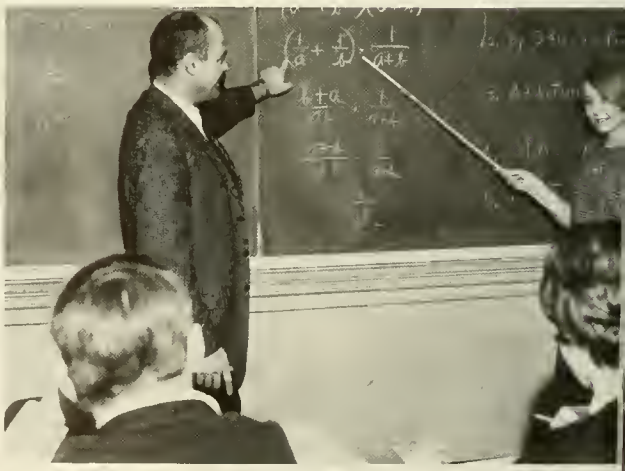
### HOW WILL THIS BE ACCOMPLISHED?

You will be instructed and guided according to your respective aptitudes, abilities, and interests –
You will attend small, informal classes –
You will get individual attention from a faculty interested in helping you –

### WHAT'S "SPECIAL" ABOUT THIS PROGRAM?

It will prove to you that wonderful things happen when you really learn how to study –
It will make a college education possible for many of you who might otherwise have been deprived of this opportunity –





# COURSE DESCRIPTIONS / *college skills program*

If you have the potential to do college-level work but have not met college entrance requirements, this Certificate Program (no credits) will help you do so by developing your skills in language, mathematics, and science through an integrated approach. If you are progressing satisfactorily at the end of one semester, you may be recommended for a degree program.

COLLEGE SKILLS – LANGUAGE I AND II

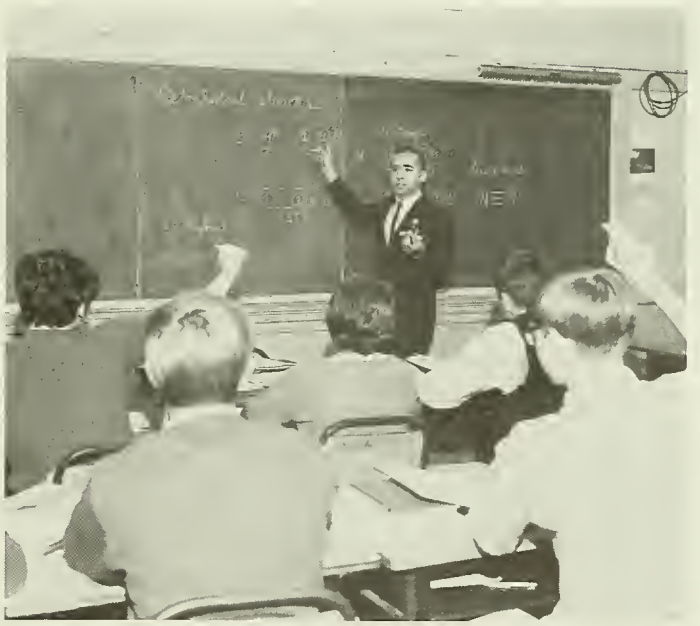
Designed to teach speaking and writing clearly, precisely, logically, and directly, and to cultivate habits of mind that produce that kind of expression. Instruction and practice in the basic elements of effective, descriptive and expository writing. To aid in preparation for college and future career opportunities. I;5 and II;5.

COLLEGE SKILLS – MATHEMATICS I AND II

Innovative course in modern mathematical methods and ideas to assist in understanding the basic properties that underlie arithmetic and algebra. Mastery of the basic concepts determine movement to advanced topics in algebra, logic, probability, geometry, and trigonometry. Preparation for effectiveness in college and careers in the field of mathematics. I;4 and II;4.

COLLEGE SKILLS – SCIENCE I AND II

Modern approach to the basic principles and concepts of natural and physical science. Discussions, lectures, revised laboratory experiments and problem-solving opportunities will insure a solid foundation for college science courses and science-related careers. I;4 and II;4.



# SCHOOL OF APPLIED ARTS AND SCIENCES

## Career Programs

*PROGRAMS FOR YOU IF YOU PLAN –*

To enroll in a one or two-year semi-professional or technical career program which will prepare you for immediate entry into business or industry, or for transfer to appropriate baccalaureate programs.

*TO BE ADMITTED YOU MUST –*

Be a high school graduate or have successfully passed the General Education Development (GED) Test. (Exceptions are made in certain Certificate Programs.)

Submit a completed application form with a $10.00 application fee. This fee is not refundable.

Submit a transcript of your high school grades along with a recommendation from your high school principal or counselor.

Obtain satisfactory scores on a series of entrance tests which will be administered by the College after your application has been received. Upon the completion of testing, a counselor will discuss your educational and vocational goals and assist you in planning an appropriate educational program. *No SAT or ACT scores are required for these programs.*

Submit a completed Health Certificate after acceptance.

Submit the above information to the College Admissions Office.

**Many Employers** *come to WACC to offer our graduates jobs with excellent starting salaries, liberal insurance benefits, stock options, company financed educational programs, and unlimited advancement opportunities.*

# CAREER PROGRAMS

The School of Applied Arts and Sciences of The Williamsport Area Community College was developed from the internationally famous Williamsport Technical Institute which had its origin in 1919. From its beginning to its community college status, it has shown an adaptability to changing demands for trained manpower. The development of the present community college has been a direct result of this foresightedness and flexibility.

Recent government statistics indicate that 70% of today's 23 year-olds have had no job training and have not completed a college education. Paradoxically, nearly 80% of all jobs available in the United States require some vocational or technical skills.

The School of Applied Arts and Sciences of the College offers 53 career programs to meet the current manpower shortage in semi-professional and technical categories. It constantly studies the future as well as the present needs of business, the total society of the area, and the wider world in which its students will work and live. Then it modifies its programs to meet needs and opportunities.

## *AN INTERVIEW WITH DEAN BRESSLER is must reading for*

*High School Students • Parents • High School Teachers • High School Counselors*
*Junior High School Counselors • All Interested Applicants • Employers*

JAMES P. BRESSLER, Dean of the School of Applied Arts and Sciences

The following interview with an applicant for the Drafting Program will answer most of your questions about the 53 Career Programs in the School of Applied Arts and Sciences.

Applicant: If I want to become a draftsman, how long do I have to go to the Community College?

Dean Bressler: Two years.

Applicant: I understand that you have two Mechanical Drafting Programs. One is an Associate Degree Program, and the other is a Certificate Program. What's the difference?

Dean Bressler: There is no time difference - they both take two years. The Associate Degree Program is stiffer. For most Associate Degree Programs you have to have had two years of high school mathematics and one year of science to qualify; and then, to continue in the program, you must take more academic subjects. This pays off in the long run because employers are willing to pay higher salaries for skilled technicians if they also have a good general education.

Applicant: How would I know whether to take the Associate Degree Program in Engineering Drafting Technology or the Certificate Program in Mechanical Drafting?

Dean Bressler: If you have the high school requirements needed for the Associate Degree, you will be given a series of tests. The results of these tests will tell you whether you will have a better chance of success in the Certificate, or the Associate Degree Programs.

Applicant: Now, let me get it straight. If I take the Certificate Program in Mechanical Drafting, are you saying that there are no admission requirements, and that I will spend most of my time learning drafting skills and a minimum of time on academic subjects?

Dean Bressler: That's about the size of it. But, let me explain the difference. While admission to the Associate Degree Program is based upon required high school subjects and the aptitude test, admission

to a Certificate Program is determined more on general aptitude and ability for an occupational area as shown by the aptitude test, rather than by your high school background. We look at your ability and desire to learn a skill more than we do at your ability to do high-level academic work. However, in the Certificate Programs you'll have to take some work in basic English, mathematics and economics.

Applicant: Why do I have to take these subjects?

Dean Bressler: There are many reasons, but probably the most important is the fact that you are not only preparing to enter a job but also to grow as a person. Changes are rapid now both in industry and in our society. The only way that you can advance in your career and become an effective part of your community is to have a broad cultural background in social studies, humanities, and natural sciences. The broadly educated person is more valuable to his community and to his employer. To develop culturally is to live a more satisfying life.

Applicant: If I complete a two-year Associate Degree Program, does that mean that I will always be a technician?

Dean Bressler: No indeed. What it really means is that you will have a marketable skill. You will be ready to take a job right after graduation at a beginning salary of approximately $5,500. Some of our graduates start at $4,000 and others start as high as $8,000. And here is something else you should know. Many industries will finance additional education for you. If you are motivated, you can eventually become a professional engineer. If this happens, "the sky is the limit" as far as earning potential and opportunities are concerned.

Applicant: My parents always wanted me to go to a four-year college and work for a baccalaureate degree in a professional field. I don't think I want to go to college for four years before I can earn money. Am I wrong?

Dean Bressler: This is a difficult question to answer. I would have to know more about you. What are your plans for the future? What are your present circumstances? We want you to do what will help you most to meet your career objectives and to develop as a person. I do know that there are many students who have raised the same question as you have. I know of many who didn't want to go to four-year colleges, but they went to please their parents. They felt there was no purpose to what they were studying, and many of them never finished college. Today, they are out looking for jobs, but they can't find them because they have no skill to sell.

Applicant: Are you saying it is better to go to a two-year college and take a technical program than to go to a four-year college and get a baccalaureate degree?

Dean Bressler: No indeed. I'm just saying that if you want to go to college for two years, then do so, and learn a technical skill or technology. Then you will be in a position to earn a good salary. Technician jobs at all levels are going begging. You will have a skill or specialized knowledge to sell at the end of your two years, and you will have a good chance of getting a job in a firm that will pay for your further education. Some students eventually earn a bachelor's degree this way.

Applicant: That makes sense.

Dean Bressler: It certainly does. Educators are just beginning to realize the importance of the technician in today's world. Industry needs an average of between five to seven technicians for every *one* professional engineer. We can't graduate students quickly enough to supply industry's demands.

Applicant: I was pretty lazy in high school and I just managed to get by. I realize I made a mistake and really think I'm ready to get down to business. Is there any way I could brush up on some subjects?

Dean Bressler: Yes, we have courses and programs available to help you make up your academic deficiencies.

Applicant: Talking about academic deficiencies reminds me that a friend asked me to find out what you could do for him.

Dean Bressler: What's his problem?

Applicant: Well, he could have worked harder in high school too, and now that he's out, he's been drifting along and getting nowhere. He'd like to come to WACC with me, but he doesn't know what program to take. Can you help him?

Dean Bressler: I have what I think will be an excellent solution for his problem.

Applicant: Really! What is it?

Dean Bressler: It's the Vocational Diagnostic Program, a program designed to assist students in career selection through testing, counseling, and actual job trial experiences.

Applicant: I get the general idea, but how does it work?

Dean Bressler: Let me explain. It provides extensive vocational information through a series of tours, movies, and lectures, and provides working experience through actual job trials in different vocational areas that seem most relevant to his abilities and interests. This, we feel, provides the information necessary to make the right vocational choice.

Applicant: How much time does the program take?

Dean Bressler: Exactly three weeks, and during that time he will be given information about 25 different career fields including their educational and training requirements, employment opportunities,

physical demands, and the wages he can expect. He would also be in contact daily with a counselor who will assist him in his final career selection.

Applicant: I like that - especially the personal touch.

Dean Bressler: Actually, the purpose of all our Career Programs at WACC is to assist students achieve their goals. If you check the College catalog, you will find 53 career programs to meet a broad range of abilities and interests.

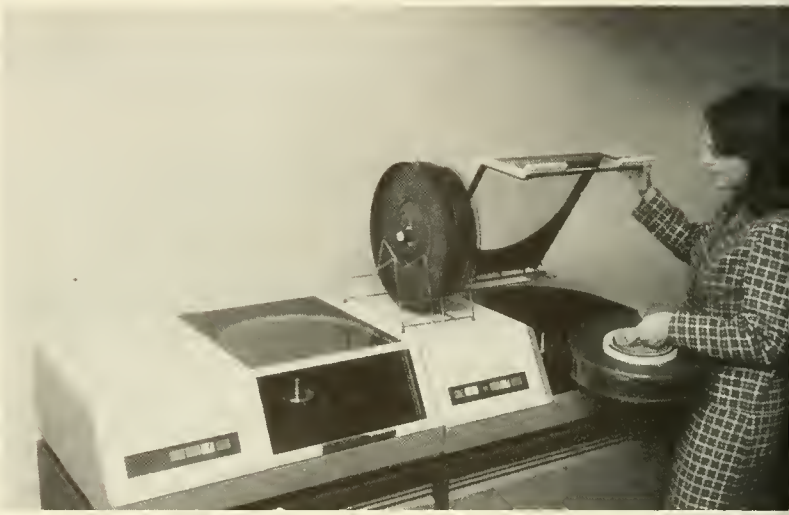
Applicant: How much will the Vocational Diagnostic Program cost him?

Dean Bressler: The tuition is $75.00. But if he is a resident of a sponsoring district, he will have to pay only $25.00 or one-third of the amount.

Applicant: The program is tailored for him. And I know a lot of other fellows who could use it too. Thanks very much. Now, I've just one more question. Would it be possible for me to visit the College, inspect the Drafting Department, and talk to the instructors?

Dean Bressler: Yes indeed. You can call the chairman of the Drafting Department anytime and tell him what day you want to visit. He'll be happy to answer all your questions. I hope you will decide to come to WACC. If you do, I'm sure, in years to come, you'll agree that it was the best investment of time and effort you ever made. But, better yet, forget about calling the Drafting Department. I'll walk down there with you and help you set up an appointment. That way you can see the department and some of the students at work. I think you'll like what you see.

RETURN BOOKS HERE



# CAREERS FOR WOMEN

**We invite . . .**

Recent high school graduates

Housewives interested in "second careers"

To consider 53 EXCITING CAREER OPPORTUNITIES

**We thought you'd like to know that . . .**

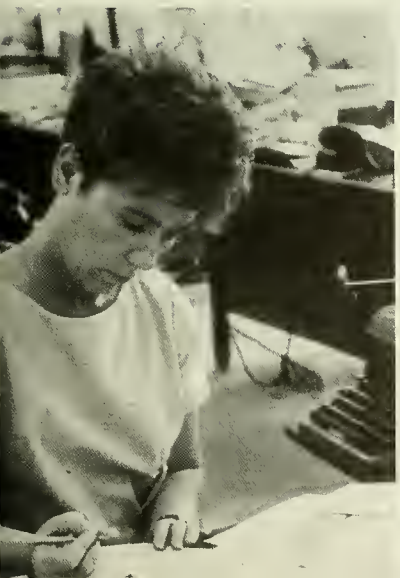
An estimated 50% of all jobs will be held by women in the next ten years.

Today, a woman can work in nearly any field she desires, if she has the ability, knowledge, and skill.

Women graduates have found successful careers in many of the Career Programs WACC offers.

WACC is constantly adding new Career Programs for women to fill critical needs in business, industry, and the health-service field.

The present ratio of men to women students at WACC is eight to one . . . but . . . it's changing with the times!



# CAREER PROGRAMS

The School of Applied Arts and Sciences works closely with management representatives from business and industry as well as labor groups to develop new programs which will provide students with needed skills and area industry with trained manpower. Pictured are industry representatives who met with Dr. Carl to help develop the Forest Technology Program. Left to right are Nelson Folsom, Wood Procurement Manager, Charmin Paper Products Company (a subsidiary of Proctor and Gamble), and Edward Swisher, Wood Procurement Manager, Hammermill Paper Company, Lock Haven.

## *Associate Degree Career Programs*

The School of Applied Arts and Sciences offers twenty-nine Associate in Applied Science Degree Programs which have been designed to prepare you for a semi-professional or technical career in business, industry, or the health-service field. These two-year Associate Degree Career Programs include technical specialty courses, allied subject matter, and special general education courses.

Associate Degree courses are not generally designed for transfer to four-year colleges or universities. However, some colleges will accept our Associate Degree credits for transfer to their four-year programs leading to a baccalaureate degree. More and more colleges are offering this college-transfer opportunity to our Associate Degree graduates.

## *Certificate Career Programs*

The School of Applied Arts and Sciences offers twenty-four Certificate in Applied Science Programs designed to prepare you for entry employment in business, industry, or the health-service field. These one-and two-year Certificate Career Programs provide intensive skills training in specific occupations and emphasize functional shop-laboratory work. Related technical and special general education instruction is offered in separate supporting courses or is integrated into the occupational content of these programs.

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# *Career Programs*

## COURSE IDENTIFICATIONS

Associate Degree and Certificate Career Programs and course descriptions in the School of Applied Arts and Sciences are alphabetically organized within department units.

Career Programs in the School of Applied Arts and Sciences are preceded by two identification letters.
Example: AU AUTOMOTIVE TECHNOLOGY (Program)

Course descriptions within the programs in the School of Applied Arts and Sciences are preceded by two or three identification letters and two digits. Examples: AU 23 Braking Systems (Course)
MAT 03 Basic Geometry (Course)

Associate Degree course descriptions specify credits and clock hours per semester.

Certificate course descriptions specify clock hours per semester.

Course descriptions in the School of Liberal Arts and Sciences are preceded by subject identification and three digits. These courses are designed to be college transferable.
Example: Government 201 - American Government-National

## ELECTIVES

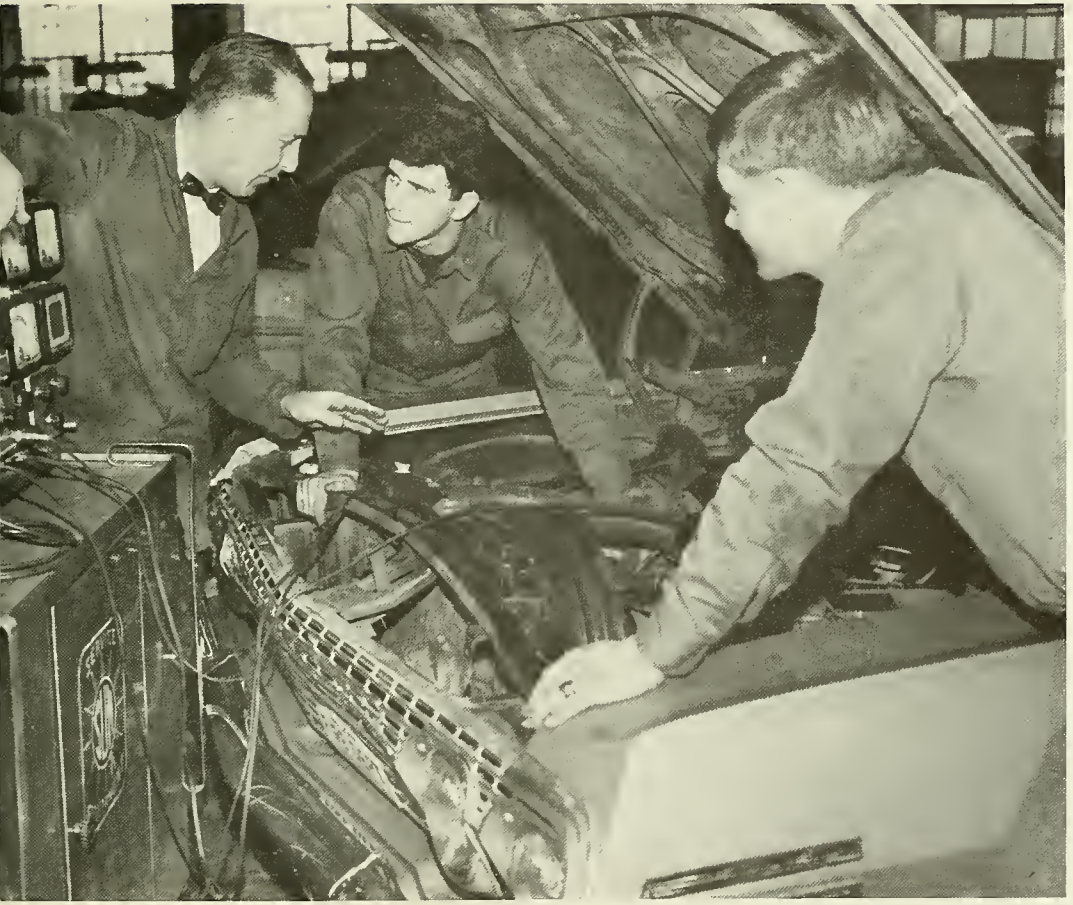
All course electives in both Associate Degree and Certificate Programs must be recommended by the advisor and the department chairman and be approved by the Dean.

## COURSE SUBSTITUTIONS AND ELECTIVES FROM THE SCHOOL OF LIBERAL ARTS AND SCIENCES

A student in Applied Arts and Sciences may take college transfer courses in the School of Liberal Arts and Sciences for his curriculum degree requirements on the recommendation of his department chairman and with the approval of the Deans, when such action is determined to be in his interest and is consistent with his career goals.

# AUTOMOTIVE DEPARTMENT / Career Programs

*CHARLES E. WILKINSON, Chairman*



## Associate Degree

AU Automotive Technology
DT Diesel Technology

## Certificate

AB Auto Body Repairman
AM Automotive Mechanics
DM Diesel Mechanics
SO Service and Operation of Heavy Construction Equipment

# AUTOMOTIVE TECHNOLOGY (AU)

*Associate Degree/ Two Years*

This program will give you an understanding of basic and advanced practice in automotive theory. You will also become knowledgeable in the use of modern industrial tools and equipment while working on major and minor components of individual units and theory applications. Theory applications, manipulative skills and semi-professional demands are course specifics. You will be prepared to solve automotive mechanical problems.

**Types of Jobs:** Highly skilled jobs in the automobile manufacturing industry, including testing and experimental departments, developmental laboratories; assembly and component remanufacturing, other rebuilding shops; and vehicle diagnostic centers.

**Job Opportunities:** Excellent with good starting salaries and unlimited advancements including the possibility of company-financed training leading to an engineering degree.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| AU 10 | Shop Principles | 1 | 0 | 3 | 48 |
| AU 11 | Automotive Engines I | 3 | 1 | 6 | 112 |
| AU 12 | Power Train I | 2 | 1 | 4 | 80 |
| AU 14 | Electrical Systems I | 3 | 1 | 6 | 112 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 16 | 10 | 20 | 480 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| AU 21 | Automotive Engines II | 3 | 1 | 6 | 112 |
| AU 22 | Power Train II | 3 | 1 | 6 | 112 |
| AU 23 | Braking Systems | 2 | 1 | 5 | 96 |
| AU 24 | Electrical Systems II | 2 | 1 | 3 | 64 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | 14 | 8 | 21 | 464 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| AU 36 | Suspension Systems I | 1 | 1 | 0 | 16 |
| AU 37 | Body and Chassis | 2 | 1 | 5 | 96 |
| AU 38 | Fuel Systems | 2 | 1 | 5 | 96 |
| ED 01 | Mechanical Drawing | 2 | 1 | 3 | 64 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 17 | 14 | 13 | 432 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| AU 40 | Diagnosis and Tuneup | 2 | 1 | 5 | 96 |
| AU 41 | Trouble Shooting | 2 | 1 | 5 | 96 |
| AU 44 | Electrical Systems III | 2 | 1 | 3 | 64 |
| AU 46 | Suspension Systems II | 1 | 0 | 3 | 48 |
| AU 48 | Selective-Control Ventilation | 3 | 2 | 3 | 80 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 16 | 11 | 19 | 480 |

**Electives:** DT 11 Engine Principles; PHY 32 Physics-Heat and Light. (For students entering with advanced placement.)

***Electives (General Studies):** ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

Physical Education for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# DIESEL TECHNOLOGY (DT)

*Associate Degree / Two Years*

The Diesel Technology Program will provide you with the theory and technical specifics of diesel-powered vehicles. You will also gain an understanding of modern testing and servicing equipment.

**Types of Jobs:** Technician in manufacturing or remanufacturing; foreman or manager of rebuilding shop or fuel injection shop; field service; customer relations man.

**Job Opportunities:** Very good with excellent starting salaries and possibilities for job advancements and company-financed further education.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| AU 10 | Shop Principles | 1 | 0 | 3 | 48 |
| DT 12 | Diesel Engines I | 4 | 3 | 7 | 160 |
| DT 13 | Electrical Systems I | 3 | 1 | 6 | 112 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 15 | 11 | 17 | 448 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| DT 22 | Diesel Engines II | 2 | 1 | 5 | 96 |
| DT 23 | Electrical Systems II | 3 | 1 | 6 | 112 |
| DT 34 | Hydraulic Systems | 2 | 1 | 3 | 64 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 17 | 13 | 15 | 448 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| DT 35 | Fuel Systems and Controls | 12 | 8 | 18 | 416 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | | 16 | 12 | 18 | 480 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| AU 48 | Selective-Control Ventilation | 3 | 2 | 3 | 80 |
| DT 46 | Power Train | 3 | 1 | 6 | 112 |
| DT 47 | Vehicle Service | 3 | 1 | 6 | 112 |
| ED 01 | Mechanical Drawing | 2 | 1 | 3 | 64 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 17 | 11 | 18 | 464 |

**Electives:** AU 38 Fuel Systems; PHY 32 Physics-Heat and Light. (For students entering with advanced placement.)

***Electives (General Studies):** ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

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Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# AUTO BODY REPAIRMAN (AB)

*Certificate / Two Years*

In the Auto Body Repairman Program you will master trade tools and equipment through theory and practice in sheet metal repairs, sanding, and application of fillers, prime and color coatings. Shrinking, stretching, welding, panel installation, interior trim, and glass replacement are also stressed. You will become skilled in frame and steering alignment as well as damage estimation and repair.

**Types of Jobs:** Shop assignments in any of the skills mentioned above.

**Job Opportunities:** Unlimited demand with good pay advancements. Work areas include self-employment, auto body shops, and insurance companies.

FIRST SEMESTER

| | | Hours Per Week | | Total |
|---|---|---|---|---|
| | | | Lab./ | Hours |
| | Course | Lect. | Practicum | Sem. |
| AB 10 | Auto Body Repair I | 5 | 19.5 | 392 |
| ENG 01 | Communications | 3 | 0 | 48 |
| MAT 10 | General Mathematics | 3 | 0 | 48 |
| | | 11 | 19.5 | 488 |

SECOND SEMESTER

| | | Hours Per Week | | Total |
|---|---|---|---|---|
| | | | Lab./ | Hours |
| | Course | Lect. | Practicum | Sem. |
| AB 20 | Auto Body Repair II | 5 | 19.5 | 392 |
| ENG 02 | Communications | 3 | 0 | 48 |
| MAT 20 | Algebra | 3 | 0 | 48 |
| | | 11 | 19.5 | 488 |

THIRD SEMESTER

| | | Hours Per Week | | Total |
|---|---|---|---|---|
| | | | Lab./ | Hours |
| | Course | Lect. | Practicum | Sem. |
| AB 30 | Auto Body Repair III | 5 | 22.5 | 440 |
| ECO 02 | Economics | 3 | 0 | 48 |
| | | 8 | 22.5 | 488 |

FOURTH SEMESTER

| | | Hours Per Week | | Total |
|---|---|---|---|---|
| | | | Lab./ | Hours |
| | Course | Lect. | Practicum | Sem. |
| AB 40 | Auto Body Repair IV | 5 | 22.5 | 440 |
| PHY 20 | Physical Science | 3 | 0 | 48 |
| | | 8 | 22.5 | 488 |

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics; one year of science.

# AUTOMOTIVE MECHANICS (AM)

*Certificate / Two Years*

Elementary theory and manipulative skills, as practiced with modern tools and equipment, are stressed in this program in which you will learn to service and repair passenger and light commercial vehicles. You will gain proficiency in working with power train, steering, brakes, body, ignition, carburetion, and electrical components and assemblies.

**Types of Jobs:** General auto mechanic in a dealership, independent garage, fleet operation, service station, etc.

**Job Opportunities:** Unlimited with opportunities for specialization and excellent hourly pay scales.

FIRST SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| AM 10 | Automotive Mechanics I | 5 | 21.5 | 424 |
| ENG 01 | Communications or ENG 11 | 3 | 0 | 48 |
| MAT 10 | General Mathematics or MAT 20 | 3 | 0 | 48 |
| | | 11 | 21.5 | 520 |

SECOND SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| AM 20 | Automotive Mechanics II | 5 | 21.5 | 424 |
| ENG 02 | Communications or ENG 12 | 3 | 0 | 48 |
| MAT 20 | Algebra or *MAT Elective | 3 | 0 | 48 |
| | | 11 | 21.5 | 520 |

THIRD SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| AM 30 | Automotive Mechanics III | 5 | 22.5 | 440 |
| ECO 02 | Economics or ECO 11 | 3 | 0 | 48 |
| | | 8 | 22.5 | 488 |

FOURTH SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| AM 40 | Automotive Mechanics IV | 5 | 21.5 | 424 |
| BM 47 | Small Business Management | 3 | 0 | 48 |
| PHY 20 | Physical Science or PHY 21 | 3/4 | 0 | 48/64 |
| | | 11/12 | 21.5 | 520/536 |

*Electives: MAT 03 Basic Geometry; MAT 13 Intermediate Algebra; MAT 21 Trigonometry.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics; one year of science.

# DIESEL MECHANICS (DM)

Certificate / Two Years

Here is your program if you like to work with large vehicles on land and water. Using modern trade tools and equipment in the care and repair of diesel-powered vehicles, you will study trade theories and develop manipulative skills in this field. Some specialization is available in the following areas: fuel injection service, engine repair and rebuilding, power train (except engine), brakes, steering, and chassis work.

**Types of Jobs:** Mechanic in any of these fields: truck dealership; independent garage; truck fleet, contractor fleet; farm or construction equipment dealerships; mining, quarrying, and waterways fleets. Also, field service representative or self employment.

**Job Opportunities:** Unlimited with good starting rates and rapid increases and advancements.

FIRST SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| AM 10 | Auto Mechanics I | 5 | 21.5 | 424 |
| ENG 01 | Communications or ENG 11 | 3 | 0 | 48 |
| MAT 10 | General Mathematics or MAT 20 | 3 | 0 | 48 |
| | | 11 | 21.5 | 520 |

SECOND SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| DM 20 | Diesel Mechanics I | 5 | 21.5 | 424 |
| ENG 02 | Communications or ENG 12 | 3 | 0 | 48 |
| MAT 20 | Algebra or *MAT Elective | 3 | 0 | 48 |
| | | 11 | 21.5 | 520 |

THIRD SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| DM 30 | Diesel Mechanics II | 5 | 22.5 | 440 |
| ECO 02 | Economics or ECO 11 | 3 | 0 | 48 |
| | | 8 | 22.5 | 488 |

FOURTH SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| BM 47 | Small Business Management | 3 | 0 | 48 |
| DM 40 | Diesel Mechanics III | 5 | 21.5 | 424 |
| PHY 20 | Physical Science or PHY 21 | 3/4 | 0 | 48/64 |
| | | 11/12 | 21.5 | 520/536 |

*Electives: MAT 03 Basic Geometry; MAT 13 Intermediate Algebra; MAT 21 Trigonometry.

Physical Education for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics; one year of science.

Certificate / Two Years

# SERVICE AND OPERATION OF HEAVY CONSTRUCTION EQUIPMENT (SO)

Service and Operation of Heavy Construction Equipment will prepare you to operate, service, and repair all types of construction machinery and become a specialist in one or two types. Welding and surveying basics are included in the program as well as complete coverage of mechanical safety measures.

**Types of Jobs:** Operation, mechanical repair, service of heavy equipment. Self-employment or work with contractors, dealers, leasors, miners, quarriers.

**Job Opportunities:** Unlimited with top pay and advancement governed only by your own ability, interest, and ambition.

FIRST SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| AM 10 | Automotive Mechanics I | 5 | 21.5 | 424 |
| SO 10 | Service and Operation I | 0 | 3 | 48 |
| ECO 02 | Economics or ECO 11 | 3 | 0 | 48 |
| | | 8 | 24.5 | 520 |

SECOND SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| SO 20 | Service and Operation II | 5 | 25.5 | 488 |
| ENG 01 | Communications | 3 | 0 | 48 |
| | | 8 | 25.5 | 536 |

THIRD SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| SO 30 | Service and Operation III | 5 | 24.5 | 472 |
| MAT 10 | General Mathematics | 3 | 0 | 48 |
| | | 8 | 24.5 | 520 |

FOURTH SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| SO 40 | Service and Operation IV | 5 | 24.5 | 472 |
| | *Elective | 3 | 0 | 48 |
| | | 8 | 24.5 | 520 |

***Electives:** BM 47 Small Business Management; Chemistry 100—Introduction To Chemistry; MAT 03 Basic Geometry; MAT 11 Basic Algebra; PHY 20 Physical Science.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics; one year of science.

# COURSE DESCRIPTIONS / *automotive department*

AB 10 AUTO BODY REPAIR I 392 Hrs.

Basic theory and practice in trade fundamentals: body and chassis work; sanding; masking; metal work; gas and electric welding.

AB 20 AUTO BODY REPAIR II 392 Hrs.

Continuation of AB 10; interior trim; reconditioning work; panel installation; front and rear alignment and suspension.
*Prerequisite: AB 10.*

AB 30 AUTO BODY REPAIR III 440 Hrs.

Continuation of AB 20; filling; color matching; spray painting.
*Prerequisites: AB 10, AB 20.*

AB 40 AUTO BODY REPAIR IV 440 Hrs.

Continuation of AB 30; electrical theory and practice; trade tool usage; damage estimation.
*Prerequisites: AB 10, AB 20, AB 30.*

AM 10 AUTOMOTIVE MECHANICS I 424 Hrs.

Disassembly, reassembly, inspection of vehicle components; engine, transmission, brake assemblies; causes of parts failures; tools and machines.

AM 20 AUTOMOTIVE MECHANICS II 424 Hrs.

Advanced study of component breakdowns, assemblies, sub-assemblies: clutch, transmission, drive-line, axles, differentials, bearings (anti-friction); service and repair of chassis units, exhaust systems, shock absorbers; seat, window and convertible top mechanisms.
*Prerequisite: AM 10.*

AM 30 AUTOMOTIVE MECHANICS III 440 Hrs.

Continuation of AM 20; brake service; suspension systems; steering units; wheel balance and alignment; theory and practice in gas and electric welding.
*Prerequisites: AM 10, AM 20.*

AM 40 AUTOMOTIVE MECHANICS IV 424 Hrs.

Review of former units; advanced theory, service, operation of electrical units; fuel system components; heating, cooling assemblies; test devices for diagnosis, trouble shooting.
*Prerequisites: AM 10, AM 20, AM 30.*

AU 10 SHOP PRINCIPLES 1 Cr. - 48 Hrs.

Common and special trade tools; bench and machine tools for tapping, threading, reaming, grinding, honing, lapping, measuring.

AU 11 AUTOMOTIVE ENGINES I 3 Cr. - 112 Hrs.

Nomenclature; parts relationships; servicing components; disassembly and reassembly procedures.

AU 12 POWER TRAIN I 2 Cr. - 80 Hrs.

Theory, diagnosis, repair, service of clutches, standard units, overdrive, universal joints, rear wheel bearings and seals.

AU 14 ELECTRICAL SYSTEMS I 3 Cr. - 112 Hrs.

Service and repair of electrical components including generators, regulators, meters, batteries, ignition systems, lighting and warning devices.

AU 21 AUTOMOTIVE ENGINES II 3 Cr. - 112 Hrs.

Continuation of AU 11; engine repair and maintenance.

AU 22 POWER TRAIN II 3 Cr. - 112 Hrs.

Continuation of AU 12.

AU 23 BRAKING SYSTEMS 2 Cr. - 96 Hrs.

Modern braking units: lining, bleeding, adjusting; master and wheel cylinders and hydraulic components, power, disc; dual brake systems.

AU 24 ELECTRICAL SYSTEMS II 2 Cr. - 64 Hrs.

Continuation of AU 14; modern testing and servicing equipment; circuitry and print reading; alternator and transistorized regulator services.

AU 36 SUSPENSION SYSTEMS I 1 Cr. - 16 Hrs.

Front and rear suspension systems theory; wheel balancing techniques; steering geometry.

AU 37 BODY AND CHASSIS 2 Cr. - 96 Hrs.

General body and chassis theory; servicing of power operated accessories; repair of exhaust systems; shock absorbing service.

AU 38 FUEL SYSTEMS 2 Cr. - 96 Hrs.

Carburetors, fuel pumps, fuel system accessories, fuel injection methods, modern test and service equipment.

AU 40 DIAGNOSIS AND TUNEUP 2 Cr. - 96 Hrs.

Modern testing equipment used in setting up generators, fuel and ignition systems; diagnosis of engine conditions.

AU 41 TROUBLE SHOOTING 2 Cr. - 96 Hrs.

Deductive method of diagnosis for trouble in engines, chassis, other units.

AU 44 ELECTRICAL SYSTEMS III 2 Cr. - 64 Hrs.

Continuation of AU 24; study of alternators and matching types of AC regulators; solid-state ignition, panel gauge instrumentation.

AU 46 SUSPENSION SYSTEMS II 1 Cr. - 48 Hrs.

Continuation of AU 36; theory application of front and rear suspension, and power steering services and repairs.

AU 48 SELECTIVE-CONTROL VENTILATION 3 Cr. - 80 Hrs.

Theory and practice in construction and service of passenger and commercial vehicle heating and air-conditioning units.

BM 47 SMALL BUSINESS MANAGEMENT

For course description, see Business Administration Department, page 105.

CS 01 INTRODUCTION TO DATA PROCESSING

For course description, see Computer Science Department, page 111.

DM 20 DIESEL MECHANICS I 424 Hrs.

Advanced practices of AM 10; theory and practice in types of diesel engines and components of diesel-operated equipment.

DM 30 DIESEL MECHANICS II 440 Hrs.

Fuel system assemblies, sub-assemblies, and components; fuel system controls; modern test instruments.
*Prerequisites: AM 10, DM 10.*

DM 40 DIESEL MECHANICS III 424 Hrs.

Trouble shooting; service and repair of prime movers, wheeled and tracked; further study of power train; brakes, exhaust system; vehicle controls; lighting and instrumentation; pneumatics and hydraulics theory and practical work; gas and electric welding.
*Prerequisites: AM 10, DM 20.*

DT 11 ENGINE PRINCIPLES 2 Cr. - 80 Hrs.

Construction fundamentals; nomenclature; relationships of parts; principles of engines; disassembly, inspection, reas-

sembly; operation of engines; oiling system; piston and connecting rod repairs; valve service and ignition timing.

DT 12 DIESEL ENGINES I 4 Cr. - 160 Hrs.

Nomenclature; disassembly; tests; analysis of malfunctions; reassembly; comparison of spark-ignition and compression-ignition (heat) engines.

DT 13 ELECTRICAL SYSTEMS I 3 Cr. - 112 Hrs.

Theory and practice in electrical systems and components.

DT 22 DIESEL ENGINES II 2 Cr. - 96 Hrs.

Continuation of DT 12; study of superchargers, blowers, pumps, governors, and heat exchangers.

DT 23 ELECTRICAL SYSTEMS II 3 Cr. - 112 Hrs.

Continuation of DT 13; modern testing and servicing equipment; circuitry and print reading; alternator and transistorized regulation.

DT 34 HYDRAULIC SYSTEMS 2 Cr. - 64 Hrs.

Theory and practical work on hydraulic systems of trucks and heavy equipment.

DT 35 FUEL SYSTEMS AND CONTROLS 12 Cr. - 416 Hrs.

Diesel injection, ignition, fuel types; governors and fuel system components.

DT 46 POWER TRAIN 3 Cr. - 112 Hrs.

Theory, adjustment, and repair of transmissions; drive-line components, rear axles, bearings, and seals.

DT 47 VEHICLE SERVICE 3 Cr. - 112 Hrs.

Application of diesel theory to truck and heavy vehicle equipment.

ECO 02
AND 11 ECONOMICS

For course descriptions, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING

For course description, see Drafting Department, page 123.

ENG 01
AND 02 COMMUNICATIONS

For course descriptions, see English and Speech Department, page 42.

ENG 11
AND 12 LANGUAGE AND COMPOSITION

For course descriptions, see English and Speech Department, page 42.

ENG 14 SPEECH

For course description, see English and Speech Department, page 42.

MAT 03 BASIC GEOMETRY

For course description, see Mathematics Department, page 181.

MAT 10 GENERAL MATHEMATICS

For course description, see Mathematics Department, page 181.

MAT 11 BASIC GEOMETRY

For course description, see Mathematics Department, page 181.

MAT 13 INTERMEDIATE ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 20 ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY

For course description, see Mathematics Department, page 181.

PHY 20 PHYSICAL SCIENCE

For course description, see Physics Department, page 192.

PHY 21 PHYSICS – MECHANICS

For course description, see Physics Department, page 192.

PHY 32 PHYSICS – HEAT AND LIGHT

For course description, see Physics Department, page 192.

SO 10 SERVICE AND OPERATION I 48 Hrs.

Theory and practice in gasoline and diesel engine servicing; major components and assemblies of vehicles; rigging, ropes, cables, and slings.
*Prerequisite: AM 10.*

SO 20 SERVICE AND OPERATION II 488 Hrs.

Continuation of SO 10; introduction to gas and electric welding.
*Prerequisites: AM 10, SO 10.*

SO 30 SERVICE AND OPERATION III 472 Hrs.

Engine and vehicle maintenance; lubrication and electrical system theories and practices; equipment operation.
*Prerequisites: AM 10, SO 10, SO 20.*

SO 40 SERVICE AND OPERATION IV 472 Hrs.

Continuation of SO 30; machine practices.
*Prerequisites: AM 10, SO 20, SO 30.*

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

CHEMISTRY 100 – INTRODUCTION TO CHEMISTRY

For course description, see Chemistry courses, page 39.

ENGLISH 201 OR 202 – HISTORY OF ENGLISH LITERATURE

For course descriptions, see English and Speech courses, page 42.

ENGLISH 211 – FUNDAMENTALS OF SPEECH

For course description, see English and Speech courses, page 42.

GOVERNMENT 201 – AMERICAN GOVERNMENT – NATIONAL

For course description, see Government courses, page 45.

GOVERNMENT 202 – STATE AND LOCAL GOVERNMENT

For course description, see Government courses, page 45.

HISTORY 201 – HISTORY OF THE UNITED STATES

For course description, see History courses, page 46.

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY

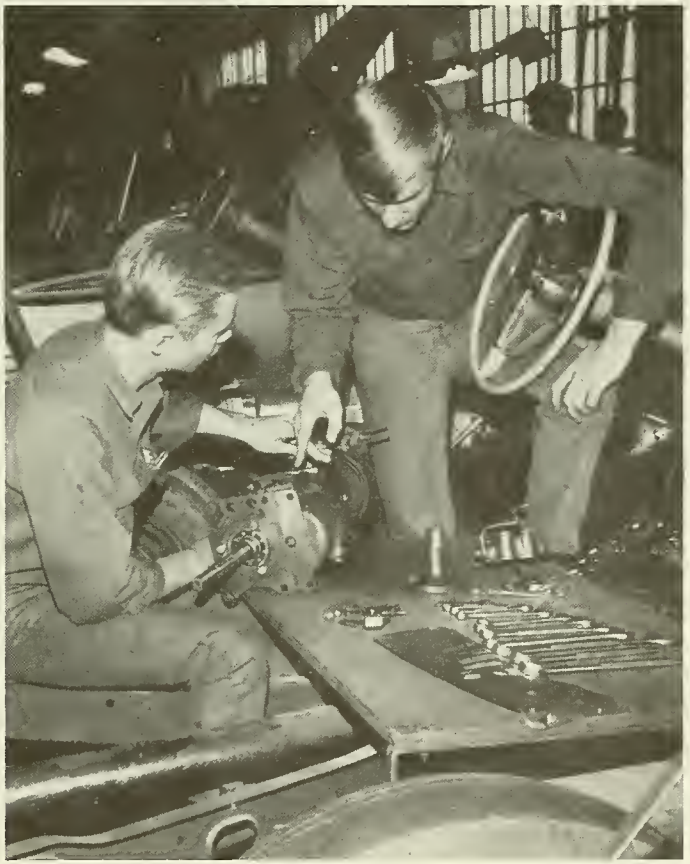
For course description, see Psychology courses, page 51.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY

For course description, see Sociology courses, page 51.

SPANISH 101 OR 102 – BEGINNING SPANISH

For course descriptions, see Spanish courses, page 52.



# AVIATION DEPARTMENT / Career Program

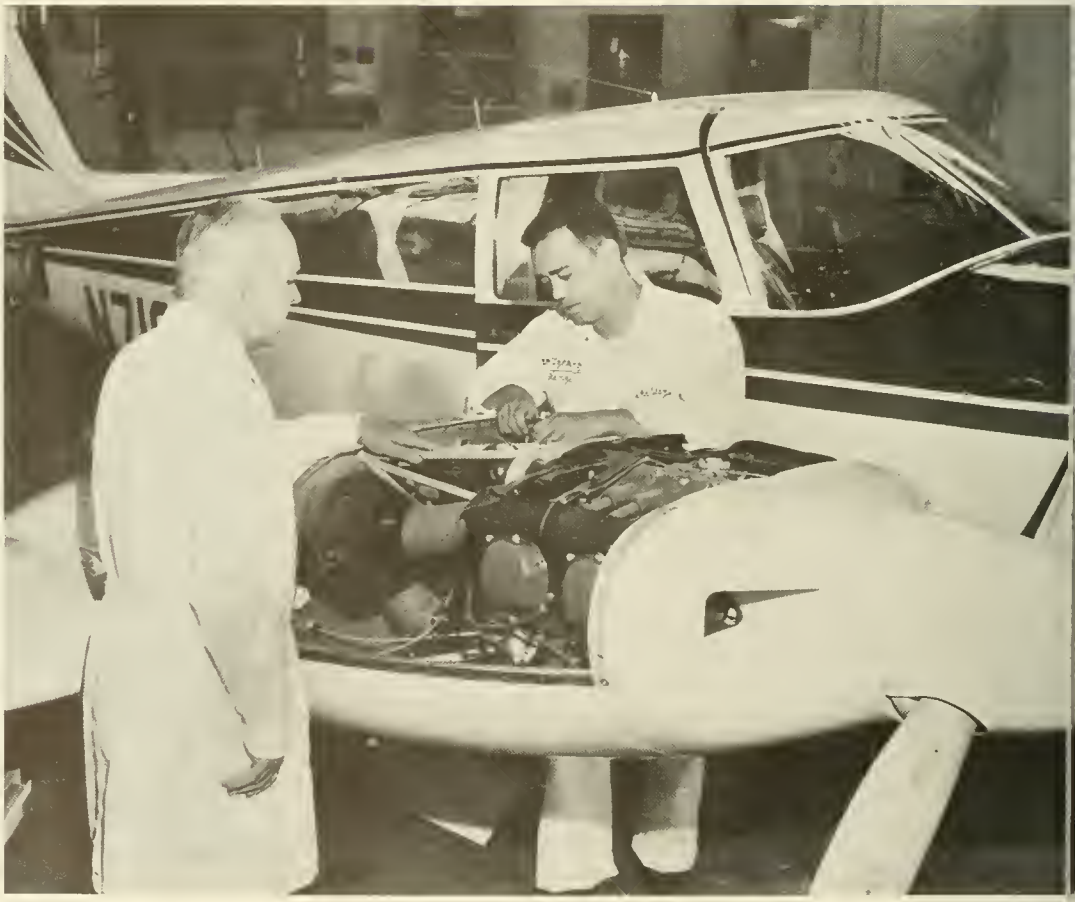
*C. FRANK PANNEBAKER, Chairman*

Associate Degree

CP Career Pilot Technology

Certificate

AC Aviation Maintenance Technician



# CAREER PILOT TECHNOLOGY (CP)

## Associate Degree / Two Years

If you are interested in becomming a commercial airline or cargo carrier pilot, this two-year program is for you. You will be qualified to work as an industrial executive plane pilot or in advanced positions throughout the general aviation field. In addition to meeting the Federal Aviation Agencies' requirements for commercial pilot with an instrument rating, the related courses are also designed to provide you with executive skills and knowledge which will enable you to progress from the pilot's seat to an executive position.

**Types of Jobs:** Commercial airline pilot; cargo carrier pilot; industrial executive positions.

**Job Opportunities:** Unlimited and increasing daily with advancements governed only by individual initiative.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CP 10 | Primary Flight | 2 | 1 | 3.5 | 70 |
| CP 11 | Aeronautical Science I | 3 | 3 | 0 | 48 |
| CP 12 | Navigation Science I | 3 | 3 | 0 | 48 |
| CP 13 | Engine and Aircraft Structures | 3 | 3 | 0 | 48 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 18 | 17 | 4.5 | 342 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CP 20 | Commercial Flight I | 2 | 1.25 | 3.5 | 75 |
| CP 21 | Meteorology | 3 | 3 | 0 | 48 |
| CP 22 | Aerodynamics | 3 | 3 | 0 | 48 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | 15 | 14.25 | 4.5 | 299 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CP 30 | Commercial Flight II | 2 | 1.25 | 3.5 | 75 |
| CP 31 | Navigational Science II | 3 | 3 | 0 | 48 |
| CP 32 | Aeronautical Science II | 3 | 3 | 0 | 48 |
| ENG 13 | Technical Writing | 3 | 3 | 0 | 48 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | Psychology 101-Gen. Psy. | 3 | 3 | 0 | 48 |
| | | 18 | 17.25 | 3.5 | 331 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CP 40 | Instrument and Multi-Engine Ratings | 2 | 1 | 2.5 | 61 |
| CP 41 | Aeronautical Science III | 3 | 3 | 0 | 48 |
| CP 42 | Instrument Flight Theory | 3 | 3 | 0 | 48 |
| IM 31 | Supervision-Human Relations | 3 | 3 | 0 | 48 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 17 | 16 | 2.5 | 301 |

*Electives (General Studies): ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

# AVIATION MAINTENANCE TECHNICIAN (AC)

*Certificate / Two Years*

If you want to be an aircraft and powerplant maintenance technician, this is the program for you. You will receive theoretical and practical instruction in such areas as aircraft dope and fabric work, electricity, welding, hydraulics, aircraft powerplant maintenance and overhaul, carburetion, ignition systems, flight-line maintenance, and trouble shooting. As a graduate of this program, you will be qualified to take the Federal Aviation Agency Mechanics Examination and upon successful completion will hold an Airframe and Powerplant Maintenance Certificate.

**Types of Jobs:** Maintenance technicians for airlines, fixed-based operators and manufacturers' services.

**Job Opportunities:** Unlimited with excellent starting salaries and opportunities for further industry-financed education.

FIRST SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| AC 10 | General Airframe and Powerplant | 10 | 15,5 | 408 |
| ED 01 | Mechanical Drawing | 1 | 3 | 64 |
| MAT 10 | General Mathematics or MAT 20 | 3 | 0 | 48 |
| | | 14 | 18.5 | 520 |

SECOND SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| AC 20 | Basic Powerplant | 10 | 16.5 | 424 |
| ENG 01 | Communications or ENG 11 | 3 | 0 | 48 |
| MAT 20 | Algebra or *MAT Elective | 3 | 0 | 48 |
| | | 16 | 16.5 | 520 |

THRID SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| AC 30 | Basic Airframe | 10 | 16.5 | 424 |
| ECO 02 | Economics or ECO 11 | 3 | 0 | 48 |
| ENG 02 | Communications or ENG 12 | 3 | 0 | 48 |
| | | 16 | 16.5 | 520 |

FOURTH SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| AC 40 | Advanced Airframe and Powerplant | 11 | 16.5 | 440 |
| PHY 20 | Physical Science | 3 | 0 | 48 |
| | | 14 | 16.5 | 488 |

*Electives: MAT 03 Basic Geometry; MAT 13 Intermediate Algebra; MAT 21 Trigonometry.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics; one year of science.

# COURSE DESCRIPTIONS / *aviation department*

AC 10 GENERAL AIRFRAME AND POWERPLANT 408 Hrs.

Basic concepts of aircraft, powerplant, aircraft systems maintenance; aircraft, powerplant nomenclature; theory of operation, weight, balance; blueprint reading; mechanics privileges, limitations; publications, aircraft forms.

AC 20 BASIC POWERPLANT 424 Hrs.

Theory, construction, nomenclature, operation of internal combustion engines; trade tools; theory, maintenance of fuel; electrical, ignition, lubrication, jet, reciprocating propulsion systems.
*Prerequisite: AC 10.*

AC 30 BASIC AIRFRAME 424 Hrs.

Theory of flight; aircraft control systems; basic woodworking, hovering, skills in finishing, sheet metal, welding, rigging, assembly; operation and theory of aircraft electrical, hydraulic, pneumatic, air conditioning, fuel systems.
*Prerequisite: AC 10.*

AC 40 ADVANCED AIRFRAME POWERPLANT 440 Hrs.

Review and advanced practice in structural repairs of all metal aircraft systems; live aircraft experience; service procedures; overhaul, testing, installation, operation of live engines; troubleshooting of fuel, electrical, ignition, instrument systems.
*Prerequisites: AC 20, AC 30.*

CP 10 PRIMARY FLIGHT 2 Cr. - 70 Hrs.

Phase 1 — Introduction to flight; 15 hours dual-flight time, 8 hours oral briefing; solo flight qualification.
Phase 2 — 10 hours dual flight, 25 hours solo flight, 12 hours oral briefing.
*Prerequisite: Phase 1.*
*Corequisite: CP 11, CP 12, CP 13.*

CP 11 AERONAUTICAL SCIENCE I 3 Cr. - 48 Hrs.

Theory of flight; elementary aerodynamics; major components and functions of aircraft; weight and balance; Federal Air Regulations; introduction to meteorology, reading, teletype weather data, weather maps.
*Corequisite: CP 12 and CP 13.*

CP 12 NAVIGATIONAL SCIENCE I 3 Cr. - 48 Hrs.

Computers in the solution of basic navigational problems, aeronautical charts, pilot techniques; introduction to Airman's Information Manual, Airman's Guide, radio navigation, radio communications.
*Corequisites: CP 11 and CP 13.*

CP 13 ENGINE AND AIRCRAFT STRUCTURES 3 Cr. - 48 Hrs.

Theory, materials, methods of construction, lubrication and induction systems, superchargers, general operation procedures, engine, propeller, aircraft.
*Corequisites: CP 10, CP 11, CP 12.*
*Possible Private Pilot Certificate qualification.*

CP 20 COMMERCIAL FLIGHT I 2 Cr. - 75 Hrs.

Preparation for Federal Aviation Commercial Pilot Certificate; 15 hours dual, 40 hours solo, 20 hours oral instruction.
*Prerequisite: Private Pilot Certificate.*
*Corequisites: CP 21, CP 22.*

CP 21 METEOROLOGY 3 Cr. - 48 Hrs.

Basic concepts of meteorology, temperature, pressures, moisture, stability, clouds, air masses, fronts, thunder storms, icing, fog; analysis and use of weather data; interpretation and use of U.S. Weather Bureau maps, reports, forecasts.
*Prerequisite: Private Pilot Certificate.*

CP 22 AERODYNAMICS 3 Cr. - 48 Hrs.

Aerodynamics as related to aircraft performance and stability; comparison of jet and reciprocating engines; operational considerations of design variations; emergency situations.
*Prerequisite: Private Pilot Certificate.*

CP 30 COMMERCIAL FLIGHT II 2 Cr. - 75 Hrs.

Continuation of Commercial Flight I; 15 hours dual flight, 41 hours solo flight, 20 hours oral instruction and briefing.
*Prerequisite: CP 20*
*Corequisites: CP 31 and CP 32.*

CP 31 NAVIGATIONAL SCIENCE II 3 Cr. - 48 Hrs.

Functioning, capabilities, limitations of radio navigation systems; computer solutions to navigation problems; radio navigation charts, Air Route Traffic Control System; introduction to instrument landing aids, instrument flying procedures.
*Prerequisite: CP 12.*

CP 32 AERONAUTICAL SCIENCE II 3 Cr. - 48 Hrs.

Fundamentals, instruments and regulations of safe flight.

CP 40 INSTRUMENT AND MULTI-ENGINE RATINGS 2 Cr. - 61 Hrs.

Phase 1 – Federal Aviation Agency Instrument Pilot Rating; 30 hours dual instrument instruction, 15 hours oral instruction.
*Prerequisite: Completion of semesters one, two, and three. Corequisite: CP 42.*
Phase 2 – Federal Aviation Agency Multi-Engine Rating; 9 hours multi-engine dual flight instruction, 1 hour solo flight, 6 hours oral instruction and briefing.

CP 41 AERONAUTICAL SCIENCE III 3 Cr. - 48 Hrs.

Theory, power sources and mechanics of aircraft systems: hydraulic, electrical, fuel oil, pressurization, anti-icing, instrumentation.

CP 42 INSTRUMENT FLIGHT THEORY 3 Cr. - 48 Hrs.

Instrument flight control indoctrination for orientation, holding, tracking, cross country, departures, approaches; instrument clearance shorthand; practice in two-way radio communications; phraseology pertaining to instrument flight.

CS 01 INTRODUCTION TO DATA PROCESSING

For course description, see Computer Science Department, page 111.

ECO 02 AND 11 ECONOMICS

For course descriptions, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING

For course description, see Drafting Department, page 123.

ENG 01 AND 02 COMMUNICATIONS

For course descriptions, see English and Speech Department, page 42.

ENG 11 AND 12 LANGUAGE AND COMPOSITION

For course descriptions, see English and Speech Department, page 42.

ENG 13 TECHNICAL WRITING

For course description, see English and Speech Department, page 42.

ENG 14 SPEECH

For course description, see English and Speech Department, page 42.

IM 31 SUPERVISION – HUMAN RELATIONS

For course description, see Industrial Management Department, page 164.

MAT 03 BASIC GEOMETRY

For course description, see Mathematics Department, page 181.

MAT 10 GENERAL MATHEMATICS

For course description, see Mathematics Department, page 181.

MAT 13 INTERMEDIATE ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 20 ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY

For course description, see Mathematics Department, page 181.

PHY 20 PHYSICAL SCIENCE

For course description, see Physics Department, page 192.

PHY 21 PHYSICS – MECHANICS

For course description, see Physics Department, page 192.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

ENGLISH 201 OR 202 – HISTORY OF ENGLISH LITERATURE

For course descriptions, see English and Speech courses, page 42.

ENGLISH 211 – FUNDAMENTALS OF SPEECH

For course description, see English and Speech courses, page 42.

GOVERNMENT 201 – AMERICAN GOVERNMENT – NATIONAL

For course description, see Government courses, page 45.

GOVERNMENT 202 – STATE AND LOCAL GOVERNMENT

For course description, see Government courses, page 45.

HISTORY 201 – HISTORY OF THE UNITED STATES

For course description, see History courses, page 46.

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY

For course description, see Psychology courses, page 51.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY

For course description, see Sociology courses, page 51.

SPANISH 101 OR 102 – BEGINNING SPANISH

For course descriptions, see Spanish courses, page 52.

# BUILDING CONSTRUCTION DEPARTMENT / Career Programs

*ROLLAND S. FAGUE, Acting Chairman*

## Associate Degree

CB Carpentry and Building Construction Technology
TW Woodworking Technology

## Certificate

CA Carpentry
MO Woodworking Machine Operator
TL Tile Setting

# CARPENTRY AND BUILDING CONSTRUCTION TECHNOLOGY (CB)

*Associate Degree / Two Years*

This program will provide you with the theoretical and technical aspects of light building construction. You will also explore principles and techniques of light-frame carpentry and masonry with emphasis on design, construction, cost estimation, and management.

**Types of Jobs:** Positions leading to foreman, building technician, or construction superintendent.

**Job Opportunities:** Unlimited with excellent starting salaries.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CB 10 | Woodworking for Carpenters | 4 | 2 | 6 | 128 |
| CB 11 | Construction Carpentry | 4 | 2 | 6 | 128 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 15 | 11 | 13 | 384 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CB 23 | Block Construction | 5 | 2 | 14 | 256 |
| CB 24 | Estimating and Blue Prints | 2 | 2 | 0 | 32 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 17 | 14 | 15 | 464 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CB 30 | Roof-Framing Theory | 3 | 3 | 0 | 48 |
| CB 33 | Brick Construction | 4 | 2 | 9 | 176 |
| EL 12 | Basic Wiring Lab | 2 | 1 | 5 | 96 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | | 16 | 13 | 14 | 432 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CB 40 | Advanced Carpentry | 4 | 2 | 6 | 128 |
| CB 42 | Building Construction Technology | 6 | 3 | 9 | 192 |
| CB 44 | Concrete Construction | 3 | 2 | 3 | 80 |
| PHY 32 | Physics-Heat and Light | 3 | 3 | 0 | 48 |
| | | 16 | 10 | 18 | 448 |

***Electives (General Studies):** ENG 14 Speech; English 201 or 202 - History of English Literature, English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government, History 201 - History of the United States; Psychology 101 - General Psychology, Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry, one year of science.

# WOODWORKING TECHNOLOGY (TW)

*Associate Degree / Two Years*

The Woodworking Technology Program will prepare you to apply basic woodworking theory to woodworking practices and will help you to understand future developments as they take place. Laboratory work with modern machines and equipment will help you to become a woodworking technician and to assist the construction engineer in the design, construction, installation and testing of woods and wood products.

**Types of Jobs:** Wood technician; dry kiln operator.

**Job Opportunities:** Unlimited with excellent starting salaries and opportunities for further industry-financed education.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 01 | Mechanical Drawing | 2 | 1 | 3 | 64 |
| TW 10 | Design of Wood | 2 | 1 | 3 | 64 |
| TW 21 | Wood Shop Machines | 4 | 1 | 9 | 160 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Algebra | 4 | 4 | 1 | 80 |
| | | 15 | 10 | 16 | 416 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| TW 11 | Layout and Cutting | 5 | 2 | 9 | 176 |
| TW 20 | Machine Cutting | 1 | 0 | 3 | 48 |
| ENG 14 | Speech | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 16 | 12 | 13 | 400 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| AT 25 | Basic Architectural Drafting | 2 | 0 | 6 | 96 |
| TW 30 | Wood Turning | 1 | 0 | 3 | 48 |
| TW 31 | Fastening | 2 | 1 | 3 | 64 |
| TW 32 | Veneer Bending | 2 | 1 | 3 | 64 |
| TW 40 | Patternmaking | 1 | 0 | 3 | 48 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | | 15 | 9 | 18 | 432 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| TW 41 | Finishing | 1 | 0 | 3 | 48 |
| TW 42 | Blueprint Reading | 2 | 1 | 3 | 64 |
| TW 43 | Production Jigs and Fixtures | 3 | 1 | 6 | 112 |
| TW 44 | Knife Grinding and Layout | 2 | 1 | 3 | 64 |
| TW 45 | Furniture Design | 3 | 1 | 2 | 48 |
| TW 46 | Plastics | 3 | 1 | 2 | 48 |
| PHY 32 | Physics-Heat and Light or Psychology 210-Social Psychology | 3 | 3 | 0 | 48 |
| | | 17 | 8 | 19 | 432 |

***Electives (General Studies):** ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# CARPENTRY (CA)

Certificate / Two Years

This program will enable you to enter into the carpentry or masonry trades. You will be taught the basic skills of carpentry and masonry in the construction of light frame or masonry buildings and you will develop skill in the use of trade tools and materials. Basic courses in English, mathematics, economics and science will give you a good background.

**Types of Jobs:** Apprentice carpenters or masons, with advancement possibilities to journeyman, master, or foreman; also, employment in plants or factories where building units, components, or building materials are made or sold.

**Job Opportunities:** Unlimited with good starting wages. Advancement is limited only by your initiative.

FIRST SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| CA 10 | Carpentry I | 0 | 25 | 400 |
| ENG 01 | Communications or ENG 11 | 3 | 0 | 48 |
| MAT 10 | General Mathematics or MAT 20 | 3 | 0 | 48 |
| | | 6 | 25 | 496 |

SECOND SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| CA 20 | Masonry I | 0 | 25 | 400 |
| ENG 02 | Communications or ENG 12 | 3 | 0 | 48 |
| MAT 20 | Algebra or *MAT Elective | 3 | 0 | 48 |
| | | 6 | 25 | 496 |

THIRD SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| CA 30 | Masonry II | 0 | 26 | 416 |
| ECO 02 | Economics or ECO 11 | 3 | 0 | 48 |
| | | 3 | 26 | 464 |

FOURTH SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| CA 40 | Carpentry II | 0 | 25 | 400 |
| EL 12 | Basic Wiring Lab | 1 | 5 | 96 |
| PHY 20 | Physical Science or Phy 21 | 3/4 | 0 | 48/64 |
| | | 4/5 | 30 | 544/560 |

*Electives: MAT 03 Basic Geometry; MAT 13 Intermediate Algebra; MAT 21 Trigonometry

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics, one year of science.

# WOODWORKING MACHINE OPERATOR (MO)

*Certificate / One Year*

This program will train you to assist foremen, managers, and designers in the setup and operation of working machinery in manufacturing industries. High quality performance of work and production in the application of modern woodworking practices will be stressed to prepare you to meet high production standards and to adapt to new developments.

**Types of Jobs:** Machine operators in various woodworking plants with possibility of advancement to group leader; foreman; shipping department work; stock billing responsibilities; office and management positions.

**Job Opportunities:** Unlimited with excellent starting wages and opportunities for further industry-financed education.

FIRST SEMESTER

| | Course | Hours Per Week Lect. | Hours Per Week Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| MO 10 | Safety Education, Lumber, Veneers and Plywood | 1 | 2 | 48 |
| MO 11 | Hand Tools | 0 | 3 | 48 |
| MO 12 | Blueprint Reading, Shop Drawings and Layout | 3 | 0 | 48 |
| MO 13 | Shop Mathematics | 3 | 0 | 48 |
| MO 14 | Hand Operations | 0 | 3 | 48 |
| MO 15 | Fastening and Holding Devices | 0 | 1 | 16 |
| MO 16 | Portable Power Tools | 0 | 3 | 48 |
| MO 17 | Power Sanding | 0 | 1 | 16 |
| MO 18 | Production Jigs and Fixtures | 0 | 10.5 | 168 |
| MO 19 | Assembly, Gluing and Clamping | 0 | 2 | 32 |
| | | 7 | 25.5 | 520 |

SECOND SEMESTER

| | Course | Hours Per Week Lect. | Hours Per Week Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| MO 20 | Stock Billing | 1 | 0 | 16 |
| MO 21 | Wood Shop Machines | 0 | 8.5 | 136 |
| MO 22 | Production Techniques | 1 | 2 | 48 |
| MO 23 | Moulder Setup | 0 | 6 | 96 |
| MO 24 | Tenonor Setup | 0 | 1 | 16 |
| MO 25 | Mortising | 0 | 1 | 16 |
| MO 26 | Machine Production | 0 | 9 | 144 |
| MO 27 | Knife Grinding and Layout | 0 | 3 | 48 |
| | | 2 | 30.5 | 520 |

Recommended high school subjects: Two years of mathematics; one year of science.

# TILE SETTING (TL)

*Certificate / Two Years*

Manual dexterity, patience, and pride in workmanship - prerequisites of the trade - are stressed throughout the Tile Setting Program. You will gain proficiency in tile including its color, size, shape, and use, and you will also become adept in resilient floor covering installation.

**Types of Jobs:** Self-employment, store, factory, construction firms.

**Job Opportunities:** Excellent with ability to enter the building trade with specific skills.

FIRST SEMESTER

| Course | | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| TL | 11 | Fundamentals I | 5 | 0 | 80 |
| TL | 12 | Methods I | 2 | 3 | 80 |
| TL | 13 | Tilesetting I | 0 | 19.5 | 312 |
| MAT | 10 | General Mathematics | 3 | 0 | 48 |
| | | | 10 | 22.5 | 520 |

SECOND SEMESTER

| Course | | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| TL | 21 | Fundamentals II | 5 | 0 | 80 |
| TL | 22 | Methods II | 2 | 3 | 80 |
| TL | 23 | Tilesetting II | 0 | 19.5 | 312 |
| ENG | 01 | Communications | 3 | 0 | 48 |
| | | | 10 | 22.5 | 520 |

THIRD SEMESTER

| Course | | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| TL | 31 | Fundamentals III | 5 | 0 | 80 |
| TL | 32 | Methods III | 2 | 3 | 80 |
| TL | 33 | Tilesetting III | 0 | 19.5 | 312 |
| ECO | 11 | Economics | 3 | 0 | 48 |
| | | | 10 | 22.5 | 520 |

FOURTH SEMESTER

| Course | | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| TL | 41 | Fundamentals IV | 3 | 0 | 48 |
| TL | 42 | Methods IV | 2 | 3 | 80 |
| TL | 43 | Installation I | 0 | 19.5 | 312 |
| TL | 44 | Employer-Customer Relations | 2 | 0 | 32 |
| | | *Elective (General Studies) | 3 | 0 | 48 |
| | | | 10 | 22.5 | 520 |

***Electives (General Studies):** MAT 03 Basic Geometry; MAT 11 Basic Algebra; BM 47 Small Business Management; PHY 20 Physical Science.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics, one year of science.

# COURSE DESCRIPTIONS / *building construction department*

AT 25 BASIC ARCHITECTURAL DRAFTING

For course description, see Drafting Department, page 121.

BM 47 SMALL BUSINESS MANAGEMENT

For course description, see Business Administration Department, page 105.

CA 10 CARPENTRY I 400 Hrs.

Introduction to carpentry and building industry; use of hand tools, portable electric tools and woodworking machines; proper procedures and safe practices; use of framing square; study of wood and building products on market; selection and use of power drivers, other fastening devices.

CA 20 MASONRY I 400 Hrs.

Basic skills and fundamentals of masonry; block wood and concrete work in light building construction; instruction in hand tools, power equipment, testing, estimating, blueprint reading.

CA 30 MASONRY II 416 Hrs.

Brick construction, laying skills; selection of patterns; type of brick and brick architecture; estimating; layout; pricing of brick jobs.

CA 40 CARPENTRY II 400 Hrs.

Principles of frame house construction: foundation, layout, concrete form construction, framing the superstructure, sheathing and insulation, roof construction, exterior finish and millwork, interior finish, cabinet-work, and stairbuilding.

CB 10 WOODWORKING FOR CARPENTERS 4 Cr. - 128 Hrs.

Basic principles and skills of hand and machine woodworking operations; special projects.

CB 11 CONSTRUCTION CARPENTRY 4 Cr. - 128 Hrs.

Basic principles of frame construction: foundations and concrete formwork, types of building frames, strength of beams and girders, structural sheathing and house details; ideas and trends in construction methods and techniques.

CB 23 BLOCK CONSTRUCTION 5 Cr. - 256 Hrs.

Block laying skills in lab; practical work; classroom instruction covering materials used, types and sizes of blocks, principles of cost estimation.

CB 24 ESTIMATING AND BLUEPRINTS 2 Cr. - 32 Hrs.

Introduction; types of drawings; lines, marks, symbols, conventions, scales, dimensions; quantities of material and cost estimating.

CB 30 ROOF-FRAMING THEORY 3 Cr. - 48 Hrs.

Principles of rafter layout, use of framing square, problems of roof framing and construction, types of roofs and rafters.

CB 33 BRICK CONSTRUCTION 4 Cr. - 176 Hrs.

Laying various patterns of brick to meet industrial standards with speed and accuracy; following architect's drawings; chimney, fireplace and wall projects.

CB 40 ADVANCED CARPENTRY 4 Cr. - 128 Hrs.

Advanced woodworking techniques and fundamentals of finished carpentry; modern finishing materials; methods of

application; exterior and interior trim; millwork, cornice work, roofing, siding, frame for openings, interior wall and ceiling material; trim and mouldings; built-in cabinet work; stair building; school-sponsored construction work.

CB 42 BUILDING CONSTRUCTION TECHNOLOGY — 6 Cr. - 192 Hrs.

Advanced technical aspects of building construction, solution of practical problems; special advanced projects, campus construction work including house construction projects.

CB 44 CONCRETE CONSTRUCTION — 3 Cr. - 80 Hrs.

Principles of concrete design, water-cement ratio, proportions of ingredients, reinforced concrete, study of concrete footers and walls, finishing with hand and power trowel equipment, proper methods of curing and testing.

CS 01 INTRODUCTION TO DATA PROCESSING

For course description, see Computer Science Department, page 111.

ECO 02 AND 11 ECONOMICS

For course descriptions, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING

For course description, see Drafting Department, page 123.

EL 12 BASIC WIRING LAB

For course description, see Electrical Department, page 132.

ENG 01 AND 02 COMMUNICATIONS

For course descriptions, see English and Speech Department, page 42.

ENG 11 AND 12 LANGUAGE AND COMPOSITION

For course descriptions, see English and Speech Department, page 42.

ENG 14 SPEECH

For course description, see English and Speech Department, page 42.

MAT 03 BASIC GEOMETRY

For course description, see Mathematics Department, page 181.

MAT 10 GENERAL MATHEMATICS

For course description, see Mathematics Department, page 181.

MAT 13 INTERMEDIATE ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 20 ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY

For course description, see Mathematics Department, page 181.

MO 10 SAFETY EDUCATION, LUMBER, VENEERS AND PLYWOOD — 48 Hrs.

Safety education applied to a machine operator; safety zones, position and stance of the operator, methods of guarding the machines.

MO 11 HAND TOOLS — 48 Hrs.

Training in the use of special hand tools used by the machine operator: protractor, caliper, micrometer.

MO 12 BLUEPRINT READING, SHOP DRAWINGS AND LAYOUT — 48 Hrs.

Principles of orthographic projection, reading and interpreting shop drawings; details, layout of shop drawings.

MO 13 SHOP MATHEMATICS — 48 Hrs.

Fundamentals of shop mathematics: fractions, decimals, percentages, discounts, ratio and proportion.

MO 14 HAND OPERATIONS — 48 Hrs.

Basic fundamentals of hand tools, rules, scales, height gauges, wrenches.

MO 15 FASTENING AND HOLDING DEVICES — 16 Hrs.

Holding and fastening devices such as clamps, vices, nails, screws, bolts, anchors.

MO 16 PORTABLE POWER TOOLS — 48 Hrs.

Care and use of power tools: straight line and orbital sanders, electric drills and screw drivers, saber and circular saws, routers.

MO 17 POWER SANDING — 16 Hrs.

Types of sanders and methods of hand and power sanding; types of abrasive papers and methods of application.

MO 18 PRODUCTION JIGS AND FIXTURES 168 Hrs.

Design and construction of jigs and fixtures used in production wood work; application of production techniques.

MO 19 ASSEMBLY, GLUING AND CLAMPING 32 Hrs.

Types and uses of conventional and modern glues, including the electronic glue machine; assembly methods and procedures.

MO 20 STOCK BILLING 16 Hrs.

Quantity surveys; detailing, stock billing; routing; factory orders.

MO 21 WOOD SHOP MACHINES 136 Hrs.

Instruction in safe operation of wood working machines; crosscut and rip saws, planers, jointers, band saws and special production machines.

MO 22 PRODUCTION TECHNIQUES 48 Hrs.

Production of duplicate parts with small tolerances, routing of shop jobs, plant visitation to study industrial procedures.

MO 23 MOULDER SETUP 96 Hrs.

Instruction and practice in setup and operation of a "sticker" or moulder.

MO 24 TENONOR SETUP 16 Hrs.

Setup and operation of the tenoning machine, stressing safety.

MO 25 MORTISING 16 Hrs.

Setup and operation of the hollow chisel mortising machine.

MO 26 MACHINE PRODUCTION 144 Hrs.

Further use of woodworking machines; production standards emphasized.

MO 27 KNIFE GRINDING AND LAYOUT 48 Hrs.

Knife layout using dies and scribers, freehand grinding, knife balancing.

PHY 20 PHYSICAL SCIENCE

For course description, see Physics Department, page 192.

PHY 21 PHYSICS – MECHANICS

For course description, see Physics Department, page 192.

PHY 32 PHYSICS – HEAT AND LIGHT

For course description, see Physics Department, page 192.

TL 11 FUNDAMENTALS I 80 Hrs.

History and scope of trade; safe working practices; employee, employer; industry organizations as encountered by the beginning tile setter; introduction to tile, materials, tools of the trade.

TL 12 METHODS I 80 Hrs.

Methods of thin set tile installation and use of basic tools discussed and demonstrated in shop situations.

TL 13 TILESETTING I 312 Hrs.

Installation of glazed wall and ceramic mosaic floor tiles in the shop situation with thin setting methods used throughout the industry.

TL 21 FUNDAMENTALS II 80 Hrs.

Job processes developed and studied in detail with emphasis on layout and preparation of surfaces for tile.

TL 22 METHODS II 80 Hrs.

Conventional (Mortar) methods of installing tiles on walls and floors, demonstrated and discussed in the shop situation.

TL 23 TILESETTING II 312 Hrs.

Installation of glazed wall and ceramic mosaic floor tiles in the shop using the conventional or mortar methods; more complicated installations on permanent campus projects. *Prerequisite: TL 13.*

TL 31 FUNDAMENTALS III 80 Hrs.

Introduction to blueprints and specifications with emphasis on their use in the tilesetting trade.
*Prerequisite: GM 10.*

TL 32 METHODS III 80 Hrs.

Methods of layout; cutting and installing slate, quarry tile; marble and associated materials discussed and demonstrated. *Prerequisites: TL 12 and TL 22.*

TL 33 TILESETTING III 312 Hrs.

Installation of all trade materials with emphasis on permanent projects outside the shop.

TL 41 FUNDAMENTALS IV 48 Hrs.

Introduction and development of resilient floor coverings; study of related materials, essential tools, and methods of installation.

TL 42 METHODS IV 80 Hrs.

Discussion and demonstration of laying out and installing resilient materials using special trade tools.

TL 43 INSTALLATION I 312 Hrs.

Use of resilient floor coverings in shop situations and in permanent campus installations.

TL 44 EMPLOYER-CUSTOMER RELATIONS 32 Hrs.

Survey and study of conditions encountered by beginning tradesmen.

TW 10 DESIGN OF WOOD 2 Cr. - 64 Hrs.

Use of wood in modern design; period furniture design and contemporary styles; wood technology; processed wood, plywood, hardboard and particle board.

TW 11 LAYOUT AND CUTTING 5 Cr. - 176 Hrs.

Use and care of hand tools; layout cutting and joining wood; use of special tools, micrometers, calipers.

TW 20 MACHINE CUTTING 1 Cr. - 48 Hrs.

Methods of accurately producing duplicate wood parts to close tolerance acceptable to industry.

TW 21 WOOD SHOP MACHINES 4 Cr. - 160 Hrs.

Use and care of woodworking machines; setup and operation of saws, jointers, planers, shapers, sanders.

TW 30 WOOD TURNING 1 Cr. - 48 Hrs.

The care and use of the conventional wood turning lathe; grinding and sharpening turning chisels.

TW 31 FASTENING 2 Cr. - 64 Hrs.

Wood joinery; fastening devices such as nails, screws, bolts, fasteners, metal-wood connectors; mixing, applying, and testing glues.

TW 32 VENEER BENDING 2 Cr. - 64 Hrs.

Matching, bending, molding, gluing and laminating veneers; temperature and humidity control.

TW 40 PATTERNMAKING 1 Cr. - 48 Hrs.

Nomenclature; pattern layouts; making simple patterns.

TW 41 FINISHING 1 Cr. - 48 Hrs.

Preparation of wood for final finish; analysis of types of finish; care and cleaning of equipment; work with stains, varnish, lacquer, French polish, wax.

TW 42 BLUEPRINT READING 2 Cr. - 64 Hrs.

Reading and interpreting working drawings; shop drawings and details, as required for stock billing.

TW 43 PRODUCTION JIGS AND FIXTURES 3 Cr. - 112 Hrs.

Design, construction and use of various types of jigs and fixtures.

TW 44 KNIFE GRINDING AND LAYOUT 2 Cr. - 64 Hrs.

Design, layout and grinding of knives, cutters; freehand grinding, knife balancing and safety.

TW 45 FURNITURE DESIGN 3 Cr. - 48 Hrs.

Design of period furniture relevant to wood technology.

TW 46 PLASTICS 3 Cr. - 48 Hrs.

Fundamentals of finishing; color combinations; plastic spray materials.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

ENGLISH 201 OR 202 – HISTORY OF ENGLISH LITERATURE

For course descriptions, see English and Speech courses, page 42.

ENGLISH 211 – FUNDAMENTALS OF SPEECH

For course description, see English and Speech courses, page 42.

GOVERNMENT 201 – AMERICAN GOVERNMENT NATIONAL

For course description, see Government courses, page 45.

GOVERNMENT 202 – STATE AND LOCAL GOVERNMENT

For course description, see Government courses, page 45.

HISTORY 201 – HISTORY OF THE UNITED STATES

For course description, see History courses, page 46.

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY

For course description, see Psychology courses, page 51.

PSYCHOLOGY 210 – SOCIAL PSYCHOLOGY

For course description, see Psychology courses, page 51.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY

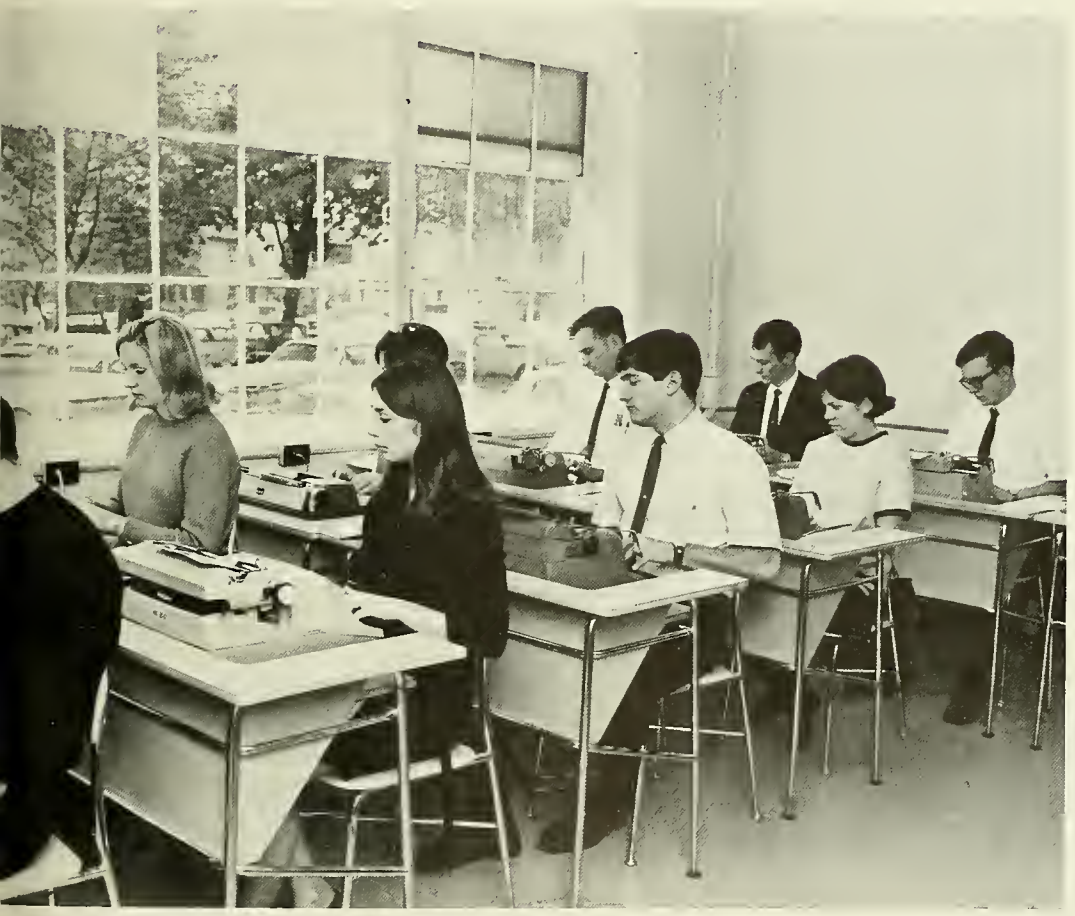
For course description, see Sociology courses, page 51.

SPANISH 101 OR 102 – BEGINNING SPANISH

For course descriptions, see Spanish courses, page 52.

# BUSINESS ADMINISTRATION DEPARTMENT / Career Programs

*DONALD BERGERSTOCK, Chairman*



## Associate Degree

BA Accounting
BM Business Management
BS Secretarial Science
Executive, Legal, Medical, Technical

## Certificate

BT Clerk-Typist

# ACCOUNTING (BA)

*Associate Degree / Two Years*

The accounting sequence is designed to give you a broad business background with specialization in the field of accounting. You will begin on the elementary levels of accounting and business principles and will advance into the more complex stages.

**Types of Jobs:** Public, private, government, corporate, cost accounting; tax consultant; auditor; comptroller.

**Job Opportunities:** Tremendous growth of small and big businesses has increased the demands for well-trained accountants. Excellent starting salaries with opportunities for professional growth.

FIRST SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BA | 12 | Accounting I | 3 | 3 | 1 | 64 |
| BM | 13 | Principles of Business | 3 | 3 | 0 | 48 |
| BM | 23 | Business Mathematics | 3 | 3 | 0 | 48 |
| BS | 10 | Typewriting | 2 | 2 | 3 | 80 |
| ENG | 11 | Language and Composition | 3 | 3 | 0 | 48 |
| | | | 14 | 14 | 4 | 288 |

SECOND SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BA | 22 | Accounting II | 3 | 3 | 1 | 64 |
| BM | 24 | Office Procedures | 2 | 1 | 4 | 80 |
| BM | 33 | Business Organization and Management | 3 | 3 | 0 | 48 |
| CS | 01 | Introduction to Data Processing | 3 | 3 | 1 | 64 |
| ENG | 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT | 11 | Basic Algebra | 3 | 3 | 0 | 48 |
| | | | 17 | 16 | 6 | 352 |

THIRD SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BA | 32 | Intermediate Accounting I | 3 | 3 | 0 | 48 |
| BA | 42 | Cost Accounting | 3 | 3 | 0 | 48 |
| BM | 21 | Business Communications | 3 | 3 | 0 | 48 |
| BM | 31 | Business Law | 3 | 3 | 0 | 48 |
| CS | 13 | Computer Philosophy | 3 | 3 | 1 | 64 |
| | | Psychology 101- General Psychology | 3 | 3 | 0 | 48 |
| | | | 18 | 18 | 1 | 304 |

FOURTH SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BA | 43 | Payroll and Tax Accounting | 3 | 3 | 0 | 48 |
| BA | 44 | Intermediate Accounting II | 3 | 3 | 0 | 48 |
| BM | 41 | Business Law | 3 | 3 | 0 | 48 |
| ECO | 46 | Economics | 3 | 3 | 0 | 48 |
| | | *Elective | 3 | 3 | 0 | 48 |
| | | | 15 | 15 | 0 | 240 |

*Elective: Any related business course (BA, BM, BS).

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Business mathematics or algebra.

# BUSINESS MANAGEMENT (BM)

## Associate Degree / Two Years

Executive or management positions are goals of the Business Management Program. The program sequence will provide you with basic business knowledge. You will study management theory and application procedures. Business concepts and implications for our economy will be covered.

**Types of Jobs:** Junior-executive or management-trainee positions in manufacturing, retailing, finance, banking, insurance, marketing, government.

**Job Opportunities:** Three or four job offers per graduate with excellent starting salaries and opportunities for advancement.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| BA 12 | Accounting I | 3 | 3 | 1 | 64 |
| BM 13 | Principles of Business | 3 | 3 | 0 | 48 |
| BM 23 | Business Mathematics | 3 | 3 | 0 | 48 |
| BS 10 | Typewriting | 2 | 2 | 3 | 80 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| | | 14 | 14 | 4 | 288 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| BA 22 | Accounting II | 3 | 3 | 1 | 64 |
| BM 24 | Office Procedures | 2 | 1 | 4 | 80 |
| BM 33 | Business Organization and Management | 3 | 3 | 0 | 48 |
| CS 01 | Introduction to Data Processing | 3 | 3 | 1 | 64 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 11 | Basic Algebra | 3 | 3 | 0 | 48 |
| | | 17 | 16 | 6 | 352 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| BM 21 | Business Communications | 3 | 3 | 0 | 48 |
| BM 31 | Business Law | 3 | 3 | 0 | 48 |
| BM 36 | Marketing | 3 | 3 | 0 | 48 |
| CS 13 | Computer Philosophy | 3 | 3 | 1 | 64 |
| | Psychology 101-Gen. Psy. | 3 | 3 | 0 | 48 |
| | *Elective | 3 | 3 | 0 | 48 |
| | | 18 | 18 | 1 | 304 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| BA 43 | Payroll and Tax Accounting | 3 | 3 | 0 | 48 |
| BM 41 | Business Law | 3 | 3 | 0 | 48 |
| BM 45 | Finance | 3 | 3 | 0 | 48 |
| ECO 46 | Economics | 3 | 3 | 0 | 48 |
| | *Elective | 3 | 3 | 0 | 48 |
| | | 15 | 15 | 0 | 240 |

***Elective:** Any related business course (BA, BM, BS).

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Business mathematics or algebra.

# SECRETARIAL SCIENCE (BS)
## Executive, Legal, Medical, Technical

*Associate Degree / Two Years*

The Secretarial Science Program is designed to give you proficiency in secretarial skills, a strong background in business and the liberal studies, and additional training in one of the following areas of specialization: executive, legal, medical, or technical.

**Types of Jobs:** Business offices in commerce, government, industry, or the professions.

**Job Opportunities:** Excellent with top salaries in specialized fields.

FIRST SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BA | 12 | Accounting I | 3 | 3 | 1 | 64 |
| BM | 14 | Office Machines | 2 | 1 | 4 | 80 |
| BS | 10 | Typewriting | 2 | 2 | 3 | 80 |
| BS | 14 | Shorthand | 3 | 4 | 1 | 80 |
| HI | 21 | U.S. History | 3 | 3 | 0 | 48 |
| ENG | 11 | Language and Composition | 3 | 3 | 0 | 48 |
| | | | 16 | 16 | 9 | 400 |

SECOND SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BM | 23 | Business Mathematics | 3 | 3 | 0 | 48 |
| BS | 20 | Typewriting | 2 | 2 | 3 | 80 |
| BS | 23 | Office Practice | 2 | 2 | 1 | 48 |
| BS | 24 | Shorthand | 3 | 4 | 1 | 80 |
| ENG | 12 | Language and Composition | 3 | 3 | 0 | 48 |
| | | *Specialization | 3 | 3 | 0 | 48 |
| | | | 16 | 17 | 5 | 352 |

*SPECIALIZATION COURSES

ST 25 Anatomy and Physiology . . . . . Medical
Psychology 101—General Psychology . . . . Exec., Legal, Tech.
or
Sociology 101—Introduction to Sociology . . Exec., Legal, Tech.

THIRD SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BM | 21 | Business Communications | 3 | 3 | 0 | 48 |
| BS | 30 | Typewriting | 2 | 2 | 3 | 80 |
| *BS | 34 | Shorthand Workshop | 7 | 5 | 6 | 176 |
| | | *Specialization | 3 | 3 | 0 | 48 |
| | | | 15 | 13 | 9 | 352 |

*SPECIALIZATION COURSES

BM 13 Principles of Business . . . . . Exec. and Tech.
BM 31 Business Law . . . . . Legal
ST 30 Medical Terminology . . . . . Medical

FOURTH SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| *BS | 44 | Secretarial Workshop | 9 | 6 | 9 | 240 |
| BS | 45 | Office Internship | 1 | 0 | 3 | 48 |
| ECO | 46 | Economics | 3 | 3 | 0 | 48 |
| | | *Specialization | 3 | 3 | 0 | 48 |
| | | | 16 | 12 | 12 | 384 |

*SPECIALIZATION COURSES

BM 33 Business Organization and Management . . . . Exec. and Tech.
BM 41 Business Law . . . . . Legal
Psychology 101—General Psychology . . . . . Medical
or
Sociology 101—Introduction to Sociology . . . . . Medical

*These courses are directed to the area of specialization for students majoring as an executive, legal, medical or technical secretary. The two basic workshop courses are also designed to include such specialization.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

# CLERK-TYPIST CERTIFICATE (BT)

*Certificate / One Year*

The one-year Clerk-Typist Certificate Program is designed to give you fundamentals in typewriting and business machine calculation. You will master indexing principles, filing, and basic office procedures. You may elect shorthand, accounting, or other related courses to aid you in your vocation.

**Types of Jobs:** Clerk-typist, business machine operator, filing, general clerical and elementary accounting work, shorthand and transcription.

**Job Opportunities:** Unlimited; starting salaries are dependent upon the duties you perform.

FIRST SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| BM 14 | Office Machines | 1 | 4 | 80 |
| BS 10 | Typewriting | 2 | 3 | 80 |
| BS 12 | Clerical Procedures | 5 | 6 | 176 |
| ENG 01 | Communications | 3 | 0 | 48 |
| MAT 10 | General Mathematics | 3 | 0 | 48 |
| | *Elective | 3 | 0 | 48 |
| | | 17 | 13 | 480 |

SECOND SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| BM 21 | Business Communications | 3 | 0 | 48 |
| BM 23 | Business Mathematics | 3 | 0 | 48 |
| BS 25 | Clerical Workshop | 7 | 11 | 288 |
| ENG 02 | Communications | 3 | 0 | 48 |
| | *Elective | 3 | 0 | 48 |
| | | 19 | 11 | 480 |

*Students may elect shorthand, accounting, or other courses that coincide with their vocational objective.

Recommended high school subjects: Two years of mathematics; one year of science.

# COURSE DESCRIPTIONS / *business administration department*

BA 12 ACCOUNTING I 3 Cr. - 64 Hrs.

Introduction to basic accounting principles: accounting cycle; preparation and interpretation of statements and reports for proprietorships and partnerships.

BA 13 APPLIED ACCOUNTING – MANAGERIAL 3 Cr. - 48 Hrs.

Basic accounting principles: accounting cycle, job order; process cost accounting, budgetary control, analysis and interpretation of financial statements and reports.

BA 22 ACCOUNTING II 3 Cr. - 64 Hrs.

Advanced accounting principles as they apply to different forms of business: corporate accounting, problems of manufacturing, departmental and branch operations.
*Prerequisite: BA 12 or Department Permission.*

BA 32 INTERMEDIATE ACCOUNTING I 3 Cr. - 48 Hrs.

Intangible assets, liabilities, stockholders equities; analysis and interpretation of financial reports, statements.
*Prerequisite: BA 22.*

BA 42 COST ACCOUNTING 3 Cr. - 48 Hrs.

Records and inventories, business transactions, determining costs after processing, profit through distribution.
*Prerequisite: BA 22.*

BA 43 PAYROLL AND TAX ACCOUNTING 3 Cr. - 48 Hrs.

Payroll procedures, individual and small business federal income taxes, state income taxes.
*Prerequisite: BA 12.*

BA 44 INTERMEDIATE ACCOUNTING II 3 Cr. - 48 Hrs.

Intermediate Accounting II deals with noncurrent assets, liabilities; investments, plant, equipment, intangibles, long-term liabilities; stockholder's equity: paid-in capital, retained earnings; various analytical processes using comparative date, special ratios, measurements.
*Prerequisite: BA 32 or Department Permission.*

BM 13 PRINCIPLES OF BUSINESS 3 Cr. - 48 Hrs.

Basic business procedures, business in American economic systems.

BM 14 OFFICE MACHINES 2 Cr. - 80 Hrs.

Understanding and operation of ten-key, full-keyboard-adding-listing, rotary, key-driven calculator machines.

BM 21 BUSINESS COMMUNICATIONS 3 Cr. - 48 Hrs.

English usage, both oral and written; transcription of business letters; collateral reading.

BM 23 BUSINESS MATHEMATICS 3 Cr. - 48 Hrs.

Mathematics of installment buying; discounting notes, drafts, insurance contracts, property and income taxes, social security, stocks, bonds, transportation; graphs, measurements, business records.

BM 24 OFFICE PROCEDURES 2 Cr. - 80 Hrs.

Office forms, mail, filing, telephone, office management; instruction and practice in business machines: ten-key, full-keyboard, adding-listing, rotary, key-driven calculators, duplicating, dictating, transcribing.

BM 31 BUSINESS LAW 3 Cr. - 48 Hrs.

Evolution of law, individual and business contracts, negotiable instruments, personal property sales, bailment contracts.

BM 33 BUSINESS ORGANIZATION AND MANAGEMENT 3 Cr. - 48 Hrs.

Structure, establishment and financing of sole proprietorships, partnerships, corporations; elements of an organization; principles of authority, accountability and responsibility; levels' theory; communication; policy formulation; incentive and efficiency.

BM 34 OFFICE MACHINES 2 Cr. - 48 Hrs.

Specialized office machines; accounts receivable, payroll, inventory control machines.
*Prerequisite: BM 14 or Department Permission.*

BM 35 BUSINESS PSYCHOLOGY 3 Cr. - 48 Hrs.

Personal adjustments for employees; modern business behavior problems.

BM 36 MARKETING 3 Cr. - 48 Hrs.

Merchandising methods; distribution channels; pricing; cost; brands; government regulations; influence of buyer and consumers on marketing programs; current marketing trends.

BM 37 BANKING AND INVESTMENTS 3 Cr. - 48 Hrs.

Banking industry as related to business and economic growth, personal and business banking services, stocks and bonds marketing.

BM 38 INSURANCE 3 Cr. - 48 Hrs.

Structure and practice of insurance field; types and uses of policies; importance of insurance.

BM 39 REAL ESTATE 3 Cr. - 48 Hrs.

Real estate basics: real property ownership, lease arrangements, legal aspects of property transactions; functions and procedures of real estate broker.

BM 41 BUSINESS LAW 3 Cr. - 48 Hrs.

Insurance law contracts; surety and guaranty agreements; partnerships; corporations; real property; wills; bankruptcy proceedings; court systems; lawsuit procedures.
*Prerequisite: BM 31.*

BM 45 FINANCE 3 Cr. - 48 Hrs.

Private and public finance; monetary and credit systems, policies, problems; factors affecting supply of funds.

BM 47 SMALL BUSINESS MANAGEMENT 48 Hrs.

Location, plant layout, financial problems, records, forms, purchasing, inventory, employer-employee relations, basic business law, and improvement of small business enterprises.

BS 09 TYPEWRITING 1 Cr. - 48 Hrs.

Only for non-business students; touch typing, accuracy, speed, report copy, business letters and reports.

BS 10 TYPEWRITING 2 Cr. - 80 Hrs.

Basics of typewriting: touch typing, mechanical parts, speed, accuracy, business letters and forms. Students passing required standards may be exempt and may elect another subject.

BS 11 BUSINESS BEHAVIOR 2 Cr. - 32 Hrs.

Personal evaluations, good working habits and attitudes.

BS 12 CLERICAL PROCEDURES 176 Hrs.

Office duties: handling mail, filing, reception work, office communication systems; development of personal qualities necessary for success, self-evaluation; good working habits and attitudes; opportunity for personality development.

BS 14 SHORTHAND 3 Cr. - 80 Hrs.

Basics of Gregg shorthand, Diamond Jubilee system; outlines; proper techniques; fluency in reading and writing shorthand; dictation.

BS 20 TYPEWRITING 2 Cr. - 80 Hrs.

Advanced typing practices, production typing, special skill techniques, advanced letter writing and tabulation reports, legal forms and documents, clerical duties.
*Prerequisite: BS 10 or test qualification.*

BS 23 OFFICE PRACTICE 2 Cr. - 48 Hrs.

Operation and practice of ditto, mimeograph, dictating, and transcribing machines; general office practice.

BS 24 SHORTHAND 3 Cr. - 80 Hrs.

Continuation of BS 14; pre-transcription training; vocabulary, spelling, punctuation stressed.

BS 25 CLERICAL WORKSHOP 288 Hrs.

Advanced and office-level typewriting; typing of manuscripts, reports, office forms, statistics, production work; advanced office machines: instruction and practice on duplicating equipment, dictation, transcription equipment, bookkeeping machines, electronic calculators.
*Prerequisites: BS 10 and BS 12.*

BS 30 TYPEWRITING 2 Cr. - 80 Hrs.

Composing skills, report and manuscript typing, statistical reports, advanced production typing.

BS 34 SHORTHAND WORKSHOP 7 Cr. - 176 Hrs.

Speed and accuracy dictation and transcription of business letters; business and industry dictation; business forms and office skills; medical, legal, technical shorthand specialization; basic executive skills.

BS 44 SECRETARIAL WORKSHOP 9 Cr. - 240 Hrs.

Advanced dictation and transcription skills; specialization in medical, legal, technical and executive fields; executive office functions; practical experience.

BS 45 OFFICE INTERNSHIP 1 Cr. - 48 Hrs.

Practical experience obtained through work assignments in college offices.

CS 01 INTRODUCTION TO DATA PROCESSING

For course description, see Computer Science Department, page 111.

CS 13 COMPUTER PHILOSOPHY

For course description, see Computer Science Department, page 111.

ECO 02 ECONOMICS

For course description, see Economics Department, page 128.

ECO 46 ECONOMICS

For course description, see Economics Department, page 128.

ENG 01 COMMUNICATIONS

For course description, see English and Speech Department, page 42.

ENG 02 COMMUNICATIONS

For course description, see English and Speech Department, page 42.

ENG 11 LANGUAGE AND COMPOSITION

For course description, see English and Speech Department, page 42.

ENG 12 LANGUAGE AND COMPOSITION

For course description, see English and Speech Department, page 42.

HI 21 U.S. HISTORY 3 Cr. - 48 Hrs.

The development of the United States and Pennsylvania since Reconstruction with emphasis on social, political, and economic implications.

MAT 10 GENERAL MATHEMATICS

For course description, see Mathematics Department, page 181.

MAT 11 BASIC ALGEBRA

For course description, see Mathematics Department, page 181.

ST 25 ANATOMY AND PHYSIOLOGY 3 Cr. - 48 Hrs.

A study of basic human anatomy and physiology; cells, tissues, and tumors; nervous, excretory, reproductive, and endocrine systems; diseases; principles of chemistry, microbiology and physics.

ST 30 MEDICAL TERMINOLOGY 3 Cr. - 48 Hrs.

An introduction to medical terminology with emphasis on etiology, symptomatology, pathology, and diagnostic procedures as related to secretarial functions.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY

For course description, see Psychology courses, page 51.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY

For course description, see Sociology courses, page 51.

# COMPUTER SCIENCE DEPARTMENT / Career Programs

*FREDERICK L. BIERLY, Chairman*

Associate Degree

CS Engineering Computer Science Technology

DP Business Computer Science Technology

# ENGINEERING COMPUTER SCIENCE TECHNOLOGY (CS)

*Associate Degree / Two Years*

This program is designed to provide you with knowledge of computer use, and training for science and engineering. You will prepare problems for computer solutions. You will gain a broad and thorough knowledge of programming techniques and experience in operation of computer systems and peripheral data processing equipment. Mathematics and science are stressed in the program.

**Types of Jobs:** Computer operator, computer programmer, junior systems' analyst, engineering technician.

**Job Opportunities:** Unlimited with excellent starting salaries and advancement possibilities. With experience and continued study, you may rise to executive positions in the data processing field.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| BA 12 | Acct. I or Bus. Admin. 201 - Principles of Acct. | 3 | 3 | 1 | 64 |
| CS 14 | Fund. of Computer Science | 3 | 2 | 2 | 64 |
| CS 15 | Compiler Lang. I (Fortran) | 3 | 2 | 2 | 64 |
| ENG 11 | Lang. and Comp. or Eng. 101 - Eng. Comp. | 3 | 3 | 0 | 48 |
| MAT 21 | Trig. or Math. 102 - Col. Trig. | 4/3 | 4/3 | 1/0 | 80/48 |
| | | 16/15 | 14/13 | 6/0 | 320/288 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CS 16 | Basic Assembly Language I | 4 | 2 | 4 | 96 |
| CS 17 | Found. of Computer Science | 3 | 3 | 0 | 48 |
| ENG 12 | Lang. and Comp. or Eng. 102 - Eng. Comp. | 3 | 3 | 0 | 48 |
| PHY 21 | Phy.-Mech. or Phy. 101 - Intro. Phy. | 4 | 4 | 0 | 64 |
| | Math. 200 - Fund. of Math. | 3 | 3 | 0 | 48 |
| | | 17 | 15 | 4 | 304 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CS 22 | Basic Assembly Language II | 4 | 2 | 4 | 96 |
| CS 29 | Comp. Language II (COBOL) | 4 | 2 | 4 | 96 |
| MAT 31 | Cal. I or Math. 105 - Cal. I and Anal. Geom. | 3 | 3 | 0 | 48 |
| | Math. 201 - Stat. Anal. | 3 | 3 | 0 | 48 |
| | *Elective | 3 | 3 | 0 | 48 |
| | | 17 | 13 | 8 | 336 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CS 23 | Systems Development | 4 | 2 | 4 | 96 |
| MAT 41 | Cal. II or Math. 106 - Cal. II and Anal. Geom. | 3 | 3 | 0 | 48 |
| | Math. 220 - Matrix Alg. | 3 | 3 | 0 | 48 |
| | **Elective (General Studies) | 3 | 3 | 0 | 48 |
| | ***Elective | 3 | 3 | 0 | 48 |
| | | 16 | 14 | 4 | 288 |

***Social Science Electives:** Psychology 101 - General Psychology; Sociology 101 - Introduction to Sociology; Philosophy 101 - Introduction to Philosophical Analysis; ECO 11 or Economics 201 - Principles of Economics.

**English Electives:** ENG 13 Technical Writing or ENG 14 Speech.

****Electives (General Studies):** ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

*****Computer Science Electives:** CS 30 Internship in Computer Systems; CS 31 Process Control Programming, CS 32 Numerical Programming Methods, CS 24 Linear Programming.

**Mathematics Elective:** Mathematics 202 - Statistical Analysis

**Science Electives:** PHY 31 Physics-Electricity and Magnetism or Physics 102 - Introductory Physics; PHY 32 Physics-Heat and Light.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Two years of algebra; one year of geometry; one year of science.

# BUSINESS COMPUTER SCIENCE TECHNOLOGY (DP)

*Associate Degree / Two Years*

This program is designed to provide you with knowledge of computer use, and training for commerce and business. You will prepare problems for computer solutions. Proficiency will be gained through experience on department machines. Business accounting and management are emphasized in related courses to insure you a well-rounded background.

**Types of Jobs:** Computer operator, programmer, junior systems' analyst.

**Job Opportunities:** Unlimited with excellent starting salaries and growth potential for managerial positions such as senior systems' analyst, data processing operations, programming, and data processing manager.

FIRST SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BA | 12 | Acct. I or Bus. Admin. 201 - Principles of Acct. | 3 | 3 | 1 | 64 |
| CS | 14 | Fund. of Computer Science | 3 | 2 | 2 | 64 |
| CS | 15 | Compiler Lang. I (Fortran) | 3 | 2 | 2 | 64 |
| ENG | 11 | Lang. and Comp. or Eng. 101 - Eng. Comp. | 3 | 3 | 0 | 48 |
| MAT | 13 | Alg. or Math. 101 - Col. Alg. | 4/3 | 4/3 | 1/0 | 80/48 |
| | | | 16/15 | 14/13 | 6/0 | 320/288 |

SECOND SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BA | 22 | Acct. II or Bus. Admin. 202 - Principles of Acct. | 3 | 3 | 1 | 64 |
| CS | 16 | Basic Assembly Language I | 4 | 2 | 4 | 96 |
| CS | 17 | Found. of Computer Science | 3 | 3 | 0 | 48 |
| ENG | 12 | Lang. and Comp. or Eng. 102 - Eng. Comp. | 3 | 3 | 0 | 48 |
| | | Math. 200 - Fund. of Math. | 3 | 3 | 0 | 48 |
| | | | 16 | 14 | 5 | 304 |

THIRD SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BM | 33 | Bus. Organ and Management | 3 | 3 | 0 | 48 |
| CS | 22 | Basic Assembly Language II | 4 | 2 | 4 | 96 |
| CS | 29 | Comp. Language II (COBOL) | 4 | 2 | 4 | 96 |
| | | Math. 201 - Stat. Analy. | 3 | 3 | 0 | 48 |
| | | *Elective | 3 | 3 | 0 | 48 |
| | | | 17 | 13 | 8 | 336 |

FOURTH SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BA | 42 | Cost Accounting | 3 | 3 | 0 | 48 |
| CS | 23 | Systems Development | 4 | 2 | 4 | 96 |
| | | Math. 220 - Matrix Alg. | 3 | 3 | 0 | 48 |
| | | **Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | ***Elective | 3 | 3 | 0 | 48 |
| | | | 16 | 14 | 4 | 288 |

* **Social Science Electives:** Psychology 101 - General Psychology; Sociology 101 - Introduction to Sociology; Philosophy 101 - Introduction to Philosophical Analysis, ECO 11 or Economics 201 - Principles of Economics.

**English Electives:** ENG 13 Technical Writing or ENG 14 Speech.

** **Electives (General Studies).** Eng 14 Speech; English 201 or 202 - History of English Literature, English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government, History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish, Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

*** **Computer Science Electives:** CS 30 Internship in Computer Systems, CS 31 Process Control Programming, CS 32 Numerical Programming Methods; CS 24 Linear Programming.

**Mathematics Elective:** Mathematics 202 - Statistical Analysis.

**Business Electives:** Business Administration 250 - Business Law; BA 32 Intermediate Accounting I.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry.

# COURSE DESCRIPTIONS / *computer science department*

BA 12 ACCOUNTING I

For course description, see Business Administration Department, page 104.

BA 22 ACCOUNTING II

For course description, see Business Administration Department, page 104.

BA 32 INTERMEDIATE ACCOUNTING I

For course description, see Business Administration Department, page 104.

BA 42 COST ACCOUNTING

For course description, see Business Administration Department, page 104.

BM 33 BUSINESS ORGANIZATION AND MANAGEMENT

For course description, see Business Administration Department, page 105.

CS 01 INTRODUCTION TO DATA PROCESSING 3 Cr. - 64 Hrs.

(For non-computer science majors only) Data processing and unit record systems; operation and wiring; power and flexibility of unit record systems; problem solutions using unit record equipment; introduction to flowcharting techniques.

CS 02 INTRODUCTION TO COMPUTER LANGUAGE 3 Cr. - 64 Hrs.

(For non-computer science majors only) Algebraic programming for technical students; essentials, basic concepts of computer system components, computer logic, flowcharting; programming and problem solving with Fortran language. *Prerequisite: MAT 11 or MAT 13.*

CS 10 BASIC DATA PROCESSING MACHINES 3 Cr. - 96 Hrs.

Theory and practice on unit record systems: machine functions, wiring, operations of card punch, verifier, interpreter, sorter, reproducer, collator, and accounting machine.

CS 11 COMPUTER PROGRAMMING I 4 Cr. - 128 Hrs.

Introduction to computer systems and components; programming logic, machine language and symbolic programming languages with applied problems, program flow charting, wiring, testing, debugging, documentation, and basic programming techniques.

CS 12 COMPUTER PROGRAMMING II 3 Cr. - 96 Hrs.

Fortran language programming as applied to engineering, mathematics and business problems; utilization of disc storage; monitor and plotter systems.
*Prerequisites: CS 11, MAT 13 or equivalent.*

CS 13 COMPUTER PHILOSOPHY 3 Cr. - 64 Hrs.

Study of basic logic and problem organization for data processing applications; general introduction to the concepts and structures of programming, operating, and data communication systems; comprehensive background for future courses.

CS 14 FUNDAMENTALS OF COMPUTER SCIENCE 3 Cr. - 64 Hrs.

Basics of data processing and computer science; techniques of unit record equipment, wiring unit record equipment panel boards; problem solutions using record equipment, flowcharts of problem solutions; introduction to stored program computers concept; problem solutions, techniques of flowcharting, operation of stored program computers and peripheral devices.

CS 15 COMPILER LANGUAGE I (FORTRAN) 3 Cr. - 64 Hrs.

Fortran language programming as applied to engineering, mathematics and business problems; utilization of disc storage; monitor and plotter systems.
*Prerequisites: CS 11, MAT 13 or equivalent.*

CS 16 BASIC ASSEMBLY LANGUAGE I 4 Cr. - 96 Hrs.

Computer systems and components; programming logic, machine language and symbolic programming languages with problems, problem flowcharting, writing, testing, debugging, documentation, basic programming techniques.

CS 17 FOUNDATIONS OF COMPUTER SCIENCE 3 Cr. - 48 Hrs.

Basic logic and problem organization for data processing applications; general introduction to programming concepts, structures, operations, data communication systems; comprehensive background for future courses; development of computers and computer equipment; information structures, storage, retrieval techniques.
*Prerequisite: CS 14 or CS 01.*

CS 21 COMPUTER PROGRAMMING III 3 Cr. - 96 Hrs.

Assembler language programming for typical commercial applications; study of programming techniques, random access storage, and their use in the execution of problem exercises; accounts receivable, accounts payable, inventory, payroll.
*Prerequisite: CS 13.*

CS 22 BASIC ASSEMBLY LANGUAGE II 4 Cr. - 96 Hrs.

Assembler language programming for commercial applications; programming techniques and random access storage usage in problem exercises; accounts receivable, accounts payable, inventory, payroll.
*Prerequisites: CS 16, CS 17.*

CS 23 SYSTEMS DEVELOPMENT 4 Cr. - 96 Hrs.

Data processing systems; analysis of system specifications, equipment selection, flowcharting, programming, testing, documentation, implementation; advanced problems.
*Prerequisites: CS 16, CS 17.*

CS 24 LINEAR PROGRAMMING 3 Cr. - 64 Hrs.

Linear programming techniques and objectives; linear programming problems in scientific management techniques and operations research; simplex methods of solutions.
*Prerequisite: CS 15.*

CS 25 COMPUTER PROGRAMMING IV 4 Cr. - 112 Hrs.

Development of fluency in writing computer programs in COBOL; advanced techniques and applications; study of third generation computers and related software, such as System 360, PL/1, OS and DOS.
*Prerequisite: CS 21.*

CS 26 APPLIED TECHNICAL PROGRAMMING 3 Cr. - 80 Hrs.

Training in the application of computers to such technical areas as numerical control, civil engineering, drafting systems and computerized typesetting; utilization of N/C drilling machines, plotters and photo composition equipment.
*Prerequisite: CS 12 or CS 02.*

CS 28 NUMERICAL METHODS AND PROGRAMMING 3 Cr. - 80 Hrs.

Basic concepts of the methods used for numerical solution of problems in mathematics and engineering; typical scientific problems.
*Prerequisites: CS 12, MAT 41.*

CS 29 COMPILER LANGUAGE II (COBOL) 4 Cr. - 96 Hrs.

Writing computer programs in COBOL; advanced techniques and applications; third generation computers and related software: System 360, PL/1, OS and DOS.
*Prerequisites: CS 16, CS 17.*

CS 30 INTERNSHIP IN COMPUTER SYSTEMS 3 Cr.

Supervised individual research projects and on-the-job training.
*Prerequisite: Two semesters of Computer Science.*

CS 31 PROCESS CONTROL PROGRAMMING 3 Cr. - 64 Hrs.

Computer application to technical areas: numerical control, civil engineering, drafting systems, computerized typesetting; utilization of N/C drilling machines, plotters, photo composition equipment.
*Prerequisite: CS 15.*

CS 32 NUMERICAL PROGRAMMING METHODS 3 Cr. - 64 Hrs.

Numerical solution to problems in mathematics, engineering, science.
*Prerequisites: CS 15, Mathematics 201, Mathematics 220.*

ECO 11 ECONOMICS
For course description, see Economics Department, page 128.

ENG 11 AND 12 LANGUAGE AND COMPOSITION
For course descriptions, see English and Speech Department, page 42.

ENG 13 TECHNICAL WRITING
For course description, see English and Speech Department, page 42.

ENG 14 SPEECH
For course description, see English and Speech Department, page 42.

MAT 13 ALGEBRA
For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY
For course description, see Mathematics Department, page 181.

MAT 31 CALCULUS I
For course description, see Mathematics Department, page 182.

MAT 41 CALCULUS II
For course description, see Mathematics Department, page 182.

PHY 21 PHYSICS – MECHANICS
For course description, see Physics Department, page 192.

PHY 31 PHYSICS – ELECTRICITY AND MAGNETISM
For course description, see Physics Department, page 192.

PHY 32 PHYSICS – HEAT AND LIGHT
For course description, see Physics Department, page 192.

RELATED COURSED (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

BUSINESS ADMINISTRATION 201 AND 202 – PRINCIPLES OF ACCOUNTING
For course descriptions, see Business Administration courses, page 39.

BUSINESS ADMINISTRATION 250 – BUSINESS LAW I
For course description, see Business Administration courses, page 39.

ECONOMICS 201 – PRINCIPLES OF ECONOMICS
For course description, see Economics courses, page 40.

ENGLISH 101 AND 102 – ENGLISH COMPOSITION
For course descriptions, see English and Speech courses, page 42.

ENGLISH 201 AND 202 – HISTORY OF ENGLISH
For course descriptions, see English and Speech courses, page 42.

ENGLISH 211 – FUNDAMENTALS OF SPEECH
For course description, see English and Speech courses, page 42.

GOVERNMENT 201 – AMERICAN GOVERNMENT – NATIONAL
For course description, see Government courses, page 45.

GOVERNMENT 202–STATE AND LOCAL GOVERNMENT
For course description, see Government courses, page 45.

HISTORY 201 – HISTORY OF THE UNITED STATES
For course description, see History courses, page 46.

MATHEMATICS 101 – COLLEGE ALGEBRA
For course description, see Mathematics courses, page 47.

MATHEMATICS 102 – COLLEGE TRIGONOMETRY
For course description, see Mathematics courses, page 47.

MATHEMATICS 105 – CALCULUS I AND ANALYTIC GEOMETRY
For course description, see Mathematics courses, page 47.

MATHEMATICS 106 – CALCULUS II AND ANALYTIC GEOMETRY
For course description, see Mathematics courses, page 47.

MATHEMATICS 200 – FUNDAMENTALS OF MATHEMATICS
For course description, see Mathematics courses, page 47.

MATHEMATICS 201 AND 202 – STATISTICAL ANALYSIS
For course descriptions, see Mathematics courses, page 47.

MATHEMATICS 220 – MATRIX ALGEBRA
For course description, see Mathematics courses, page 47.

PHILOSOPHY 101 – INTRODUCTION TO PHILOSOPHICAL ANALYSIS
For course description, see Philosophy courses, page 49.

PHYSICS 101 AND 102 – INTRODUCTORY PHYSICS
For course descriptions, see Physics courses, page 50.

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY
For course description, see Psychology courses, page 51.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY
For course description, see Sociology courses, page 51.

SPANISH 101 OR 102 – BEGINNING SPANISH
For course descriptions, see Spanish courses, page 52.

# DRAFTING DEPARTMENT / Career Programs

*FRED R. JONES, Chairman*

Associate Degree

AT Architectural Technology
CT Civil Engineering Technology
ED Engineering Drafting Technology
TD Tool Design Technology
TI Technical Illustration

Certificate

MD Mechanical Drafting

# ARCHITECTURAL TECHNOLOGY (AT)

*Associate Degree / Two Years*

The Architectural Technology Program will prepare you for a position in an architectural or engineering office. You will learn drafting principles and practices through residential and commercial working drawings, first and second year design fundamentals, structural calculations and site planning.

**Types of Jobs:** Private practice, employment in corporation departments and public bureaus, construction business, landscape architecture firms, and engineering fields.

**Job Opportunities:** Good with excellent starting salaries and advancements.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| AT 11 | Statics | 3 | 3 | 0 | 48 |
| AT 21 | Fundamentals of Architectural Graphics | 4 | 2 | 10 | 192 |
| AT 31 | History of Architecture | 3 | 3 | 0 | 48 |
| ENG 11 | Language and Composition or English 101-Eng. Comp. | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 17 | 15 | 11 | 416 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| AT 12 | Structures I | 2 | 2 | 0 | 32 |
| AT 22 | Architectural Graphics | 3 | 1 | 6 | 112 |
| AT 23 | Architectural Working Drawings | 4 | 2 | 10 | 192 |
| AT 41 | Building Materials and Methods I | 2 | 2 | 0 | 32 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | 18 | 14 | 17 | 496 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| AT 13 | Structures II | 2 | 2 | 0 | 32 |
| AT 42 | Building Materials and Methods II | 3 | 3 | 0 | 48 |
| AT 51 | Building Equipment I | 3 | 3 | 0 | 48 |
| AT 61 | Design I | 4 | 2 | 10 | 192 |
| AT 62 | Site Planning | 3 | 2 | 3 | 80 |
| AT 71 | Seminar | 1 | 1 | 0 | 16 |
| | | 16 | 13 | 13 | 416 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| AT 14 | Structures III | 2 | 2 | 0 | 32 |
| AT 52 | Building Equipment II | 3 | 3 | 0 | 48 |
| AT 63 | Design II | 6 | 3 | 15 | 288 |
| AT 72 | Professional Administration and Contract Documents | 2 | 2 | 0 | 32 |
| AT 73 | Seminar | 1 | 1 | 0 | 16 |
| ECO 11 | Economics or Economics 201-Principles of Economics | 3 | 3 | 0 | 48 |
| | | 17 | 14 | 15 | 464 |

**Electives:** AT 64 Advanced Design I; AT 65 Advanced Design II. (For students entering with advanced placement.)

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# CIVIL ENGINEERING TECHNOLOGY (CT)

*Associate Degree / Two Years*

An Associate Degree in Civil Engineering Technology will prepare you to assist civil engineers in the planning, designing and construction of highways, railroads, bridges, airfields, dams, and buildings. You will study such areas of civil engineering as surveying, cartography, photogrammetry, highway engineering, and structural design. Experience with modern equipment will prepare you to meet current industrial demands.

**Types of Jobs:** Engineering technician, surveyor, inspector, draftsman, cartographer, design technician, and photogrammetrist.

**Job Opportunities:** Unlimited with excellent starting salaries and opportunities for advancements and further industry-financed education.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CT 10 | Introductory Surveying | 2 | 1 | 3 | 64 |
| CT 11 | Engineering Drawing | 5 | 1 | 12 | 208 |
| CT 12 | Elementary Cartography | 3 | 2 | 3 | 80 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 17 | 11 | 19 | 480 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CT 20 | Plane Surveying | 4 | 1 | 9 | 160 |
| CT 21 | Cartographic Techniques | 3 | 1 | 6 | 112 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | | 18 | 13 | 16 | 464 |

THIRD SEMESTER

| | Cnurse | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CT 30 | Route Surveying | 4 | 1 | 9 | 160 |
| CT 31 | Engineering Technology | 4 | 3 | 3 | 96 |
| CT 32 | Statics and Strengths of Materials | 4 | 4 | 0 | 64 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 18 | 14 | 12 | 416 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CT 40 | Advanced Surveying | 3 | 2 | 3 | 80 |
| CT 41 | Engineering Technology | 3 | 1 | 6 | 112 |
| CT 43 | Photogrammetry | 4 | 3 | 3 | 96 |
| | **Elective (2) | 6 | 6 | 0 | 96 |
| | | 16 | 12 | 12 | 384 |

*Electives (General Studies): ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

**Electives: CT 42 Structures; PHY 22 Introduction to Metallurgy; MAT 31 Calculus I; CS 02 Introduction to Computer Language; CS 26 Applied Technical Programming; Geology 101 - Elements of Geology; Government 201 - American Government - National; Psychology 101 - General Psychology; Sociology 101 - Introduction To Sociology; Geography 101 - Physical Geography.

Physical Education for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry, one year of science.

# COURSE DESCRIPTIONS / *drafting department*

AT 11 STATICS 3 Cr. - 48 Hrs.

Algebraic and graphic determination of loads, reactions, shear and moment, deflection, loading and buckling, truss design, properties of areas.

AT 12 STRUCTURES I 2 Cr. - 32 Hrs.

Theory and design of wood and timber; identification, characteristics and classifications of wood; working stresses; design of beams, columns, joints, rafters, plank, laminated sections; timber connections, fastenings and their working properties; laminated lumber, shapes.

AT 13 STRUCTURES II 2 Cr. - 32 Hrs.

Theory and design of steel beams, columns, and connections (welded, bolted and riveted) for moment, shear, slope, deflections, axial and eccentric loads; the AISC Handbook; bearing capacity of masonry walls, design of bearing plates, steel joists, space frames and trusses.

AT 14 STRUCTURES III 2 Cr. - 32 Hrs.

Reinforced concrete building; theory and design of slabs, beams, compression steel, columns, prestressed concrete, footings, walls; floors; quantitative study of structural forms from the view of material development.

AT 21 FUNDAMENTALS OF ARCHITECTURAL GRAPHICS 4 Cr. - 192 Hrs.

Basic architectural graphic media; projection drawings; axonometrics and perspective; color and texture; introduction to the architectural model; basic vocabulary of architectural drawings: composition, space, form, value, texture, shades, shadows.

AT 22 ARCHITECTURAL GRAPHICS 3 Cr. - 112 Hrs.

Architectural rendering in various media; black and white, color problems; emphasis on development of technique, style, presentation.

AT 23 ARCHITECTURAL WORKING DRAWINGS 4 Cr. - 192 Hrs.

Laboratory practice in producing a complete set of architectural working drawings; emphasis on preparation, technique, content, thoroughness, continuity, lettering, presentation quality.

AT 25 BASIC ARCHITECTURAL DRAFTING 2 Cr. - 96 Hrs.

Fundamentals of architectural drawing for woodworking technology; use and care of drawing instruments and media,

lettering, orthographic projection principles, preliminary drawing and sketching, preparation of working drawings, exterior and interior finish work, detailing cabinet and mill work.

AT 31 HISTORY OF ARCHITECTURE 3 Cr. - 48 Hrs.

Developmental survey of architecture and related fine arts from ancient times to the present; emphasis on development of site planning, form, space, methods of construction, materials in relation to man and his needs.

AT 41 BUILDING MATERIALS AND METHODS I 2 Cr. - 32 Hrs.

Study of typical materials of residental construction: their production, properties, use, performance in combinations.

AT 42 BUILDING MATERIALS AND METHODS II 3 Cr. - 48 Hrs.

Subsurface exploration and foundations, water and dampproofing; methods and materials for construction of masonry, concrete walls, slabs; wall, floor, and roof systems; the curtain wall; fireproofing; building codes; architectural hardware.

AT 51 BUILDING EQUIPMENT I 3 Cr. - 48 Hrs.

Theory and design of plumbing, heating, air-conditioning, and control systems; sources and design of water supply; sanitary and storm systems; computation of plumbing, heating and cooling loads.

AT 52 BUILDING EQUIPMENT II 3 Cr. - 48 Hrs.

Theory and design of electrical service distribution systems; selection of electrical equipment, fixtures; electrical heating design; theory and measurement of light, sound; vertical transportation systems; sound systems.

AT 61 DESIGN I 4 Cr. - 192 Hrs.

Fundamental relationships of function, space, time, light, needs of man; introduction to the design process; collaborative work; emphasis on methods of work; presentation of architectural ideas by preliminary drawings; working drawings; models.

AT 62 SITE PLANNING 3 Cr. - 80 Hrs.

Theories, methods and equipment for the measurement of distances, angles, differences in elevation; theory of error; computations; adjustment of data; mapping application of surveying methods to construction, boundaries; emphasis on production and interpretation of maps for selection of sites, planning of subdivisions, preparation of master plans; examination of sites for buildings; elements of architectural earth sculpture, water, subsurface conditions, landscaping.

AT 63 DESIGN II 6 Cr. - 288 Hrs.

Problems of differential space organizations; specialized spacial forms; relationship of space, form, structure, equipment, light; applications of elements of detailing; design of load bearing and curtain walls relating to total design; problems of tall buildings, building groups, associated site planning; architectural character and aesthetics; correlation of design with associated methods of construction; analysis, development of programs, collaborative work; advanced problems of form, visual expression; emphasis on methods of work; presentation of architectural ideas by preliminary drawings; working drawings; models.

AT 64 ADVANCED DESIGN I 2-8 Cr. - 96-384 Hrs.

Continuation of the design process; individual projects to develop student's ability to coordinate the design concept with construction.

AT 65 ADVANCED DESIGN II 2-8 Cr. - 96-384 Hrs.

Continuation of AT 64.

AT 71 SEMINAR 1 Cr. - 16 Hrs.

Study of architectural ideas, theories, current problems; nature of architect as leader; human activity; relation to man's physical, social, intellectual and spiritual nature; influence of tradition, science, technology.

AT 72 PROFESSIONAL ADMINISTRATION AND CONTRACT DOCUMENTS 2 Cr. - 32 Hrs.

Architectural registration, professional organization, ethics; forms of architectural service; contract law; bonds; liens; codes; insurance; bidding procedures; specification writing; supervision and administration of construction operation.

AT 73 SEMINAR 1 Cr. - 16 Hrs.

Continuation of AT 72 Seminar.

BM 47 SMALL BUSINESS MANAGEMENT

For course description, see Business Administration Department, page 105.

CS 01 INTRODUCTION TO DATA PROCESSING

For course description, see Computer Science Department, page 111.

CS 02 INTRODUCTION TO COMPUTER LANGUAGE

For course description, see Computer Science Department, page 111.

CS 26 APPLIED TECHNICAL PROGRAMMING

For course description, see Computer Science Department, page 112.

CT 10 INTRODUCTORY SURVEYING 2 Cr. - 64. Hrs.

Introduction to surveying; use and care of instruments; simple surveys with compass, transit, level, and tape.
*Prerequisites: High school trigonometry, algebra and geometry.*

CT 11 ENGINEERING DRAWING 5 Cr. - 208 Hrs.

Use of instruments; lettering; geometric construction; orthographic projection; sectioning; dimensioning; auxiliary views; isometric drawings; topographic maps; logical contouring; plans and profiles; methods of plotting; structural drawing.

CT 12 ELEMENTARY CARTOGRAPHY 3 Cr. - 80 Hrs.

History of mapping; map properties; coordinates and scales; determination of direction; map projections; contours and profiles; map design; map compilation; interpretation of topographic maps.

CT 20 PLANE SURVEYING 4 Cr. - 160 Hrs.

Theory and practice of plane surveying; traverses and elementary triangulation; differential and reciprocal leveling; stadia and construction surveys; plane table surveys.
*Prerequisite: CT 10.*

CT 21 CARTOGRAPHIC TECHNIQUES 3 Cr. - 112 Hrs.

Manuscript compilations; scribing; photographic color separation; typography; reproduction and processing.
*Prerequisite: CT 12.*

CT 30 ROUTE SURVEYING 4 Cr. - 160 Hrs.

Highway curves (horizontal and vertical); plus and offset; X-sections; field astronomy; route location.
*Prerequisite: CT 10.*

CT 31 ENGINEERING TECHNOLOGY 4 Cr. - 96 Hrs.

Economics of highway location; design of curves and grades; widening and super-elevation; earthwork; drainage and structures; pavements; construction and maintenance costs of highways; structural drawing; hydrology (precipitation and runoff): contracts and specifications; sanitary technology.
*Prerequisite: CT 20.*

CT 32 STATICS AND STRENGTHS OF MATERIALS 4 Cr. - 64 Hrs.

Basic principles of statics; force systems; moments of inertia of areas. Stress and deformation; engineering materials and properties; shear and moment in beams; stresses in beams; design of beams; deflection of beams; columns.
*Prerequisite: TS 21.*

CT 40 ADVANCED SURVEYING 3 Cr. - 80 Hrs.

Theory and practice of boundary surveys; city surveys; mine surveys; hydrographic surveys and stream gaging; bridge surveys; survey control, and state coordinate systems; public land surveys; precise leveling and triangulation.
*Prerequisite: CT 30.*

CT 41 ENGINEERING TECHNOLOGY 3 Cr. - 112 Hrs.

Highway location and design project; traffic analysis and survey; urban planning maps; sub-division design; land planning; transportation planning.
*Prerequisite: CT 31.*

CT 42 STRUCTURES 4 Cr. - 64 Hrs.

Theory and design of concrete, wood and steel structures.

CT 43 PHOTOGRAMMETRY 4 Cr. - 96 Hrs.

Use and application of aerial photographs; mapping by photogrammetric methods; geometry of aerial photographs; aerial triangulation; flight planning; mosaics; contracts and specifications.

ECO 02 AND 11 ECONOMICS

For course descriptions, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING 2 Cr. - 64 Hrs.

This course is offered to those students who are enrolled in curricula other than drafting. Use of drawing instruments,

lettering, geometric construction, orthographic projection, technical sketching, isometric and oblique sketches, dimensioning, sections, auxiliary views, threads and fasteners, working drawings and blue print reading.

ED 02 ENGINEERING DRAFTING 2 Cr. - 64 Hrs.

Practical application of drafting to the electrical construction field for both domestic and commercial use; house diagrams with circuit schematics, wiring diagrams and complete bill of material and layout diagrams for public facilities such as the lighting system for a small community. For Electronic Instrumentation students: electronic drafting drawing work such as wiring and circuit diagrams and schematics of control systems.

ED 03 GEARS AND CAMS 2 Cr. - 64 Hrs.

A study of motion transfer through the use of gears and cams.

ED 05 BLUEPRINT READING 1 Cr. - 48 Hrs.

A study of blueprint reading for welders with emphasis on the reading and interpretation of multiview drawings involving dimensions, notes specifications and welding symbols.

ED 10 BASIC DRAFTING I 4 Cr. - 128 Hrs.

Use of drawing instruments, lettering, geometric construction, orthographic projection, isometric drawings, sectioning, dimensioning, auxiliary views, revolutions and freehand sketching.

ED 11 BASIC DRAFTING II 4 Cr. - 128 Hrs.

Inclusion of screwthreads and fastening devices, working, assembly and installation drawings; study of sheet metal intersections and developments.
*Prerequisite: ED 10.*

ED 12 INDUSTRIAL PROCESSES 2 Cr. - 48 Hrs.

Theories and applications in the principal metal removal, forming, joining and casting processes.

ED 20 GEARS AND CAMS 4 Cr. - 128 Hrs.

A study of power and motion transfer through the use of gears and cams.

ED 21 MECHANISMS 4 Cr. - 128 Hrs.

A study of power and motion transfer through the use of various linkages and mechanisms.

ED 22 DRAFTING AND SKETCHING 3 Cr. - 96 Hrs.

A study of drafting and freehand sketching with emphasis on sketching for those who major in the Industrial Management Program. This course includes: geometrical construction, shape description, screwthreads and other fastening devices, working drawings, assembly drawings, gears, cams, and interpreting actual plant layouts and production line drawings related to the installation and operation of equipment.

ED 30 DETAIL AND ASSEMBLY DRAWINGS 4 Cr. - 128 Hrs.

Accurate working drawings, sub-assemblies and assemblies; drawing details from sketches and other engineering specifications.
*Prerequisite: ED 11.*

ED 31 APPLIED DRAFTING TECHNIQUES 4 Cr. - 128 Hrs.

Complicated detail drawings from industrial castings; comprehensive study of close tolerance dimensioning.
*Prerequisite: ED 30.*

ED 40 ADVANCED DETAIL I 4 Cr. - 128 Hrs.

Redesigning of industrial castings into weldments; detail drawings from engineering layouts; comprehensive study of welding, piping and layouts.
*Prerequisite: ED 31.*

ED 41 ADVANCED DETAIL II 4 Cr. - 128 Hrs.

Advanced study and application of drafting using layouts from industry to make detail, assembly and sub-assembly drawings; included are geometric tolerancing, true position dimensioning and surface finish specifications in accordance with industrial and military standards.
*Prerequisite: ED 40.*

ED 50 ADVANCED DETAIL AND DESIGN 4 Cr. - 128 Hrs.

Study and application of machine elements, the making of layouts required in the design of a simple machine, and the completion of the assembly and detail drawings, all in accordance with industrial requirements.
*Prerequisite: ED 41.*

ED 51 DESCRIPTIVE GEOMETRY 3 Cr. - 112 Hrs.

Principles of orthographic projection; fundamental problems involving the relationship of points, lines and planes in space; intersecting lines and planes; graphical computations for

# ENGINEERING DRAFTING TECHNOLOGY (ED)

## Associate Degree / Two Years

This program will give you a broad knowledge of mechanical drafting and engineering procedures and will provide you with the necessary background in mathematics, science and communications skills to work as a technician or engineering aide. As a graduate of this program you will be prepared to make a variety of engineering drawings and calculations.

**Types of Jobs:** Mechanical detail and layout draftsman, engineering assistant or aide, checker, field department supervisor, or jobs in related areas such as planning, traffic safety, maintenance and purchasing.

**Job Opportunities:** Unlimited in many industries with excellent starting salaries and opportunities for advancement and further industry-financed education.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 10 | Basic Drafting I | 4 | 2 | 6 | 128 |
| ED 11 | Basic Drafting II | 4 | 2 | 6 | 128 |
| ED 12 | Industrial Processes | 2 | 2 | 1 | 48 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 17 | 13 | 14 | 432 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 20 | Gears and Cams | 4 | 2 | 6 | 128 |
| ED 21 | Mechanisms | 4 | 2 | 6 | 128 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 18 | 14 | 13 | 432 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 30 | Detail and Assembly Drawings | 4 | 2 | 6 | 128 |
| ED 31 | Applied Drafting Techniques | 4 | 2 | 6 | 128 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 18 | 14 | 12 | 416 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 40 | Advanced Detail I | 4 | 2 | 6 | 128 |
| ED 41 | Advanced Detail II | 4 | 2 | 6 | 128 |
| PHY 32 | Physics-Heat and Light | 3 | 3 | 0 | 48 |
| | **Elective | 3-4 | 0 | 3 | 48-64 |
| | | 14-15 | 7 | 15 | 352-368 |

***Electives (General Studies):** ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

****Electives:** ED 51 Descriptive Geometry; MAT 31 Calculus I; PHY 22 Introduction to Metallurgy; PHY Physics-Electricity and Magnetism; ED 50 Advanced Detail and Design.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# TOOL DESIGN TECHNOLOGY (TD)

*Associate Degree / Two Years*

In Tool Design Technology you will specialize in planning and making drawings of special mechanical devices (cutting tools, gages, dies, jigs, fixtures) ranging from simple hand tools to complex progressive dies. You will learn drafting and tool production practices, and you will produce tools drawings. You will be taught how to write programs for production jobs on tape-controlled machines.

**Types of Jobs:** Tool, machine, and product designer; numerical programmer, design draftsman, estimator, and systems program designer.

**Job Opportunities:** Unlimited in many industries with excellent starting salaries and opportunities for advancement and further industry-financed education.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 10 | Basic Drafting I | 4 | 2 | 6 | 128 |
| ED 11 | Basic Drafting II | 4 | 2 | 6 | 128 |
| ED 12 | Industrial Processes | 2 | 2 | 1 | 48 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 17 | 13 | 14 | 432 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 20 | Gears and Cams | 4 | 2 | 6 | 128 |
| TD 21 | Tool Drafting | 4 | 2 | 6 | 128 |
| TT 01 | Basic Machine Shop | 2 | 2 | 4 | 96 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | 17 | 13 | 17 | 480 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| TD 30 | Cutting-Tool Design | 4 | 2 | 6 | 128 |
| TD 31 | Fixture Design | 4 | 2 | 6 | 128 |
| TT 02 | Basic Machine Shop | 2 | 2 | 4 | 96 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 17 | 13 | 16 | 464 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| TD 40 | Gage Design and Programming | 4 | 2 | 6 | 128 |
| TD 41 | Die Design | 4 | 2 | 6 | 128 |
| TT 03 | Basic Machine Shop | 2 | 2 | 4 | 96 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| PHY 22 | Introduction to Metallurgy | 4 | 4 | 0 | 64 |
| | | 17 | 13 | 16 | 464 |

*Electives (General Studies): ENG 14 Speech, English 201 or 202 - History of English Literature, English 211 - Fundamentals of Speech, Government 201 - American Government - National; Government 202 - State and Local Government, History 201 - History of the United States, Psychology 101 - General Psychology, Spanish 101 or 102 - Beginning Spanish, Sociology 101 - Introduction to Sociology, CS 01 Introduction to Data Processing

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry, one year of science.

# TECHNICAL ILLUSTRATION (TI)

*Associate Degree / Two Years*

This program will enable you to work with engineering draftsmen or technical writers. Your job will be to interpret engineering drawings into three-dimensional illustrations. The courses leading to an Associate Degree in Technical Illustration will give you not only the drawing skills necessary for this work but also the broad background in science, mathematics, and communications helpful for advancement in industry.

**Types of Jobs:** Technical illustrator for industry, either in an engineering department or in a publications department; in the engineering field you would produce clear, accurate pictures drawn from blueprints for engineers; illustrations for company literature: parts and sales catalogs, maintenance, repair, and assembly manuals, charts, and handbooks.

**Job Opportunities:** Technical illustration has advanced rapidly in industry in the last few years, and the demand for qualified people far exceeds the supply. Starting salaries are excellent.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 10 | Basic Drafting I | 4 | 2 | 6 | 128 |
| ED 11 | Basic Drafting II | 4 | 2 | 6 | 128 |
| ED 12 | Industrial Processes | 2 | 2 | 1 | 48 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 17 | 13 | 14 | 432 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| GA 10 | Reproduction Processes I | 1 | 1 | 1 | 32 |
| TI 21 | Perspective Drawing | 4 | 2 | 6 | 128 |
| TI 23 | Rendering I | 4 | 2 | 6 | 128 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | 16 | 12 | 14 | 416 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| GA 30 | Reproduction Processes III | 1 | 1 | 1 | 32 |
| TI 31 | Axonometric Drawing | 4 | 2 | 6 | 128 |
| TI 33 | Color | 2 | 1 | 3 | 64 |
| TI 34 | Rendering II | 4 | 2 | 6 | 128 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | | 15 | 10 | 16 | 416 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| TI 40 | Illustration Practice | 4 | 2 | 6 | 128 |
| TI 41 | Technical Drawing | 4 | 2 | 6 | 128 |
| TI 42 | Layout and Design | 2 | 1 | 3 | 64 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 16 | 11 | 15 | 416 |

***Electives (General Studies):** ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# MECHANICAL DRAFTING (MD)

Certificate / Two Years

In the Mechanical Drafting Program emphasis is placed upon drafting skills which will enable you to produce drawings for modern industry. You will learn the latest industrial processes which will improve and enhance your drawings and insure your efficiency.

**Types of Jobs:** Mechanical, sheet metal, electrical, or piping draftsman; related jobs such as estimator or field erection supervisor.

**Job Opportunities:** Unlimited with excellent starting salaries and opportunities for advancement and further industry-financed education.

FIRST SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| ED 12 | Industrial Processes | 2 | 1 | 48 |
| MD 15 | Drafting I | 1 | 12 | 208 |
| MD 16 | Drafting II | 1 | 12 | 208 |
| MAT 10 | General Mathematics or MAT 20 | 3 | 0 | 48 |
| | | 7 | 25 | 512 |

SECOND SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| MD 25 | Drafting III | 1 | 11 | 192 |
| MD 26 | Drafting IV | 1 | 11 | 192 |
| ENG 01 | Communications or ENG 11 | 3 | 0 | 48 |
| MAT 20 | Algebra or *MAT Elective | 3 | 0 | 48 |
| | | 8 | 22 | 480 |

THIRD SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| MD 35 | Drafting V | 1 | 12 | 208 |
| MD 36 | Drafting VI | 1 | 12 | 208 |
| ENG 02 | Communications or ENG 14 | 3 | 0 | 48 |
| | **Elective | 3 | 0 | 48 |
| | | 8 | 24 | 512 |

FOURTH SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| MD 45 | Drafting VII | 1 | 12 | 208 |
| MD 46 | Drafting VIII | 1 | 12 | 208 |
| ECO 02 | Economics or ECO 11 | 3 | 0 | 48 |
| PHY 20 | Physical Science or PHY 21 | 3/4 | 0 | 48/64 |
| | | 8/9 | 24 | 512/528 |

*Electives: MAT 13 Intermediate Algebra; MAT 21 Trigonometry.

**Electives: MD 55 Drafting IX; BM 47 Small Business Management; Chemistry 100 - Introduction to Chemistry; MAT 03 Basic Geometry.

Physical Education for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics; one year of science.

bearings and slopes of lines, strike and dip of planes; solution of problems of intersection of planes and solids.
*Prerequisite: High school background of drafting or MD 01.*

ENG 01
AND 02 COMMUNICATIONS

For course descriptions, see English and Speech Department, page 42.

ENG 11
AND 12 LANGUAGE AND COMPOSITION

For course descriptions, see English and Speech Department, page 42.

ENG 14 SPEECH

For course description, see English and Speech Department, page 42.

GA 10 REPRODUCTION PROCESSES I

For course description, see Graphic Arts Department, page 153.

GA 20 REPRODUCTION PROCESSES II

For course description, see Graphic Arts Department, page 154.

GA 30 REPRODUCTION PROCESSES III

For course description, see Graphic Arts Department, page 154.

MAT 03 BASIC GEOMETRY

For course description, see Mathematics Department, page 181.

MAT 10 GENERAL MATHEMATICS

For course description, see Mathematics Department, page 181.

MAT 13 INTERMEDIATE ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 20 ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY

For course description, see Mathematics Department, page 181.

MAT 31 CALCULUS I

For course description, see Mathematics Department, page 182.

MD 15 DRAFTING I 208 Hrs.

Mechanical drawing; lettering; geometric drawing; orthographic projection; pictorial projections; sectioning; dimensioning; auxiliary views; revolutions; free-hand sketching; reproduction processes.

MD 16 DRAFTING II 208 Hrs.

Threads, fasteners, springs; working drawings; assembly, detail and installation drawings.
*Prerequisite: MD 15.*

MD 25 DRAFTING III 192 Hrs.

Study of sheet metal intersections and developments, cones, transition pieces, irregular shapes; introduction to making accurate detail drawings from industrial machine parts.
*Prerequisite: MD 16.*

MD 26 DRAFTING IV 192 Hrs.

Accurate detail drawings from complicated industrial machine parts, conforming to industrial and military standards; comprehensive study of close tolerance dimensioning.
*Prerequisite: MD 25.*

MD 35 DRAFTING V 208 Hrs.

Study of power transmissions, pulleys, sheaves, gears, sprockets.
*Prerequisite: MD 26.*

MD 36 DRAFTING VI 208 Hrs.

Study of the mechanisms used to create motion in machines, cams, linkages.
*Prerequisite: MD 35.*

MD 45 DRAFTING VII 208 Hrs.

Redesigning of industrial castings into weldments; detail drawings from engineering layouts; comprehensive study of welding, piping and layout drawings.

MD 46 DRAFTING VIII 208 Hrs.

Advanced study of drafting applications using industrial layouts to make detail, assembly, sub-assembly drawings; geometric tolerancing; true position dimensioning; surface finish specifications in accordance with industrial and military standards.
*Prerequisite: MD 45.*

MD 55 DRAFTING IX 208 Hrs.

Simple machine layout; completion of the necessary drawings according to industrial practices.
*Prerequisite: Approval of Department Chairman.*
*NOTE: Courses to be taken in sequence as listed unless approval is granted by the Department Chairman.*

PHY 20 PHYSICAL SCIENCE

For course description, see Physics Department, page 192.

PHY 21 PHYSICS – MECHANICS

For course description, see Physics Department, page 192.

PHY 22 INTRODUCTION TO METALLURGY

For course description, see Physics Department, page 192.

PHY 31 PHYSICS – ELECTRICITY AND MAGNETISM

For course description, see Physics Department, page 192.

PHY 32 PHYSICS – HEAT AND LIGHT

For course description, see Physics Department, page 192.

TD 21 TOOL DRAFTING 4 Cr. - 128 Hrs.

Transition between drafting and tool design; drawing techniques; purchased parts; standards of shop drawings; material lists; selection of materials and heat treating of metals.
*Prerequisite: ED 11.*

TD 30 CUTTING – TOOL DESIGN 4 Cr. - 128 Hrs.

Design of single-edge cutting tools, boring bars and multiple-edge cutting tools.

TD 31 FIXTURE DESIGN 4 Cr. - 128 Hrs.

Design of leaf and tumble jugs, plain and index milling fixtures, vise jaws, chuck jaws, lathe fixtures, and adaptor plates.

TD 40 GAGE DESIGN AND PROGRAMMING 4 Cr. - 128 Hrs.

Writing of programs for point to point and contouring tape controlled machines; design of plug, snap, ring, flush pin depth, length and indicating gages.
*Prerequisites: ED 10 and 11.*

TD 41 DIE DESIGN 4 Cr. - 128 Hrs.

Designing of cutting, forming, drawing, and cavity dies; simple progressive and compound arrangements.

TI 21 PERSPECTIVE DRAWING 4 Cr. - 128 Hrs.

Instruction in one-point or parallel perspective, two-point or angular perspective; projection method and measuring plan emphasized.

TI 23 RENDERING I 4 Cr. - 128 Hrs.

Shading of illustrations using various types of water base pigments to produce wash and opaque illustrations of geometric constructions.

TI 31 AXONOMETRIC DRAWING 4 Cr. - 128 Hrs.

Instruction in isometric, dimetric and trimetric projections; instruction in use of popular industrial drawing aids.

TI 33 COLOR 2 Cr. - 64 Hrs.

Color theory and training in the use and application of color; full color rendering of products; use of flat colors and color aids.

TI 34 RENDERING II 4 Cr. - 128 Hrs.

Continuation of Rendering I; fundamental training and skills required to produce continuous tone drawings with airbrush.

TI 35 TECHNICAL ILLUSTRATION I 6½ Cr. - 208 Hrs.

Instruction in one-point or parallel perspective, two-point or angular perspective; projection and measuring plan methods.

TI 36 TECHNICAL ILLUSTRATION II 6½ Cr. - 208 Hrs.

Instruction in isometric, dimetric and trimetric projections; use of popular industrial drawing aids.

TI 40 ILLUSTRATION PRACTICE 4 Cr. - 128 Hrs.

Training in rendering art for technical manuals and related art, combinations for rendering learned techniques, preparation of presentation folio.

TI 41 TECHNICAL DRAWING 4 Cr. - 128 Hrs.

Continuation of perspective and axonometric drawing course; production of illustration to meet employment requirements including assembly, exploded and cut-away views of mechanical objects.

TI 42 LAYOUT AND DESIGN 2 Cr. - 64 Hrs.

Basic fundamentals of layout; creation of sketches, designs, thumbnail sketches, comprehensives, with emphasis on technique, structure, mechanics, awareness, and communication.

TI 45 TECHNICAL ILLUSTRATION III 208 Hrs.

Training in preparing illustrations for publication in technical manuals, line and continuous tone drawings employing various types of pens and ink, commercial lettering and shading sheets.

TI 46 TECHNICAL ILLUSTRATION IV 208 Hrs.

Converting complex blueprints to three-dimensional isometric dimetric, trimetric and perspective drawings; assembly, exploded, and cut-away views; use of industrial drawing aids—perspective boards, axonometric grids, and special lettering equipment.

TI 55 TECHNICAL ILLUSTRATION V 208 Hrs.

Special problems in advanced work in all phases of technical illustration in accordance with industrial requirements; setting up complete drawing system at any desired angle and producing three-dimensional protractor, grid and scale.

TT 01 BASIC MACHINE SHOP

For course description, see Machine Shop Department, page 180.

TT 02 BASIC MACHINE SHOP

For course description, see Machine Shop Department, page 180.

TT 03 BASIC MACHINE SHOP

For course description, see Machine Shop Department, page 180.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

CHEMISTRY 100 — INTRODUCTION TO CHEMISTRY

For course description, see Chemistry courses, page 39.

ECONOMICS 201 — PRINCIPLES OF ECONOMICS

For course description, see Economics courses, page 40.

ENGLISH 101 — ENGLISH COMPOSITION

For course description, see English and Speech courses, page 42.

ENGLISH 201 OR 202 — HISTORY OF ENGLISH LITERATURE

For course descriptions, see English and Speech courses, page 42.

ENGLISH 211 — FUNDAMENTALS OF SPEECH

For course description, see English and Speech courses, page 42.

GEOGRAPHY 101 — PHYSICAL GEOGRAPHY

For course description, see Geography courses, page 43.

GEOLOGY 101 — ELEMENTS OF GEOLOGY AND HISTORICAL GEOLOGY

For course description, see Geology courses, page 44.

GOVERNMENT 201 — AMERICAN GOVERNMENT — NATIONAL

For course description, see Government courses, page 45.

GOVERNMENT 202 — STATE AND LOCAL GOVERNMENT

For course description, see Government courses, page 45.

HISTORY 201 — HISTORY OF THE UNITED STATES

For course description, see History courses, page 46.

MATHEMATICS 101 — COLLEGE ALGEBRA

For course description, see Mathematics courses, page 47.

PSYCHOLOGY 101 — GENERAL PSYCHOLOGY

For course description, see Psychology courses, page 51.

SOCIOLOGY 101 — INTRODUCTION TO SOCIOLOGY

For course description, see Sociology courses, page 51.

SPANISH 101 OR 102 — BEGINNING SPANISH

For course descriptions, see Spanish courses, page 52.

# COURSE DESCRIPTIONS / *economics department*

*HARVEY H. KUHNS, JR., Department Chairman*

ECO 02 ECONOMICS 3 Cr. - 48 Hrs.

Fundamentals of American economy: attributes of capitalism; production, distribution and consumption of goods and services; consumer demand; money and banking in United States; employment; labor problems; personnel policies in modern industry.

ECO 11 ECONOMICS 3 Cr. - 48 Hrs.

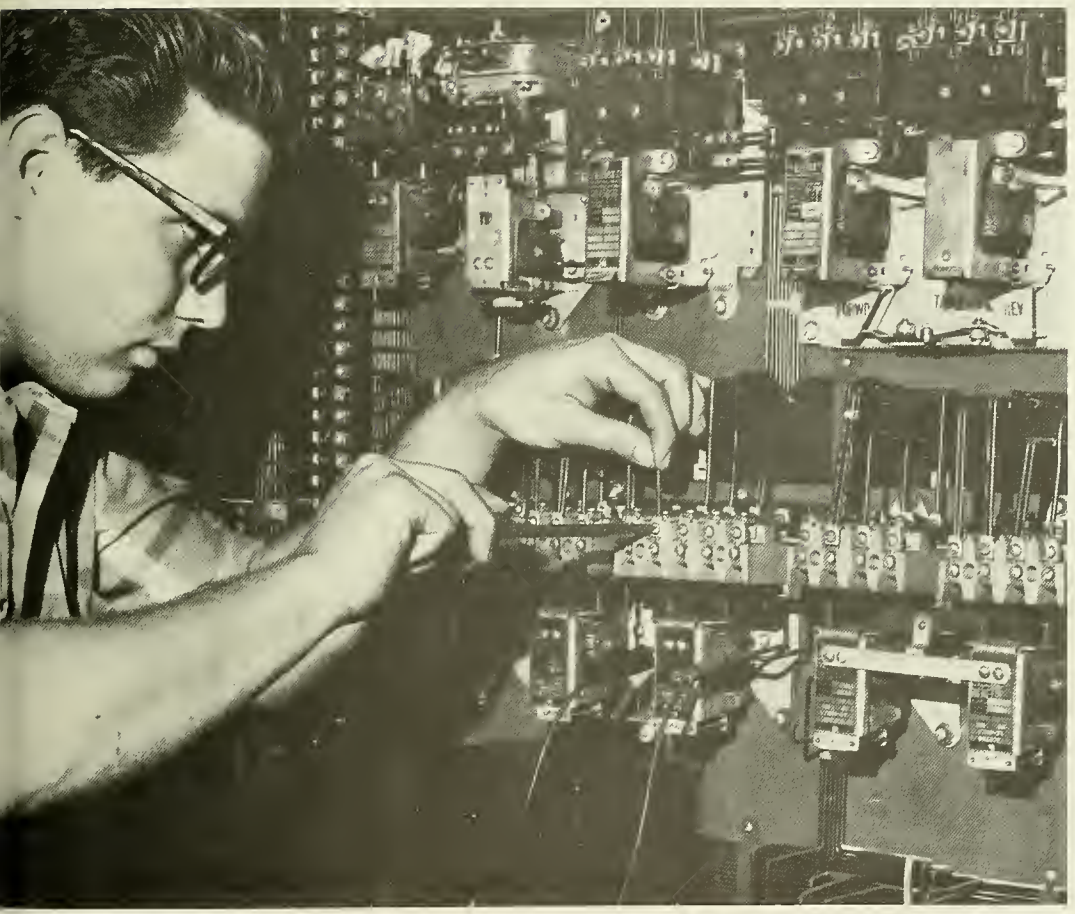
Basic principles of our economy: American capitalistic system; business cycles; investments; stock market operation; personnel policies and procedures.

ECO 46 ECONOMICS 3 Cr. - 48 Hrs.

Group problems involving national economy; labor laws, financial policies, and personnel; income, employment, business fluctuations, and economic analysis.

# ELECTRICAL DEPARTMENT / Career Programs

*JOHN W. HOUGH, Chairman*



Associate Degree

EL Electrical Technology

Certificate

EW Electrical Construction

# ELECTRICAL TECHNOLOGY (EL)

*Associate Degree / Two Years*

As an electrical technologist, you will be working with electronics equipment or electrical machinery. Your degree program will stress electrical basics including theory, circuits, industrial electronics, electrical machinery and electrical construction. Courses in mathematics, science, and communications will enhance your vocational opportunities.

**Types of Jobs:** Electrical technology and laboratory work; industrial maintenance technician; trouble shooter for electrical equipment manufacturers.

**Job Opportunities:** Unlimited and excellent starting salaries with opportunities for industry-financed education.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| EL 11 | Direct Current Fundamentals | 4 | 5 | 3 | 128 |
| EL 12 | Basic Wiring Lab | 2 | 1 | 5 | 96 |
| EL 18 | Accident Prevention | 2 | 2 | 0 | 32 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 15 | 15 | 9 | 384 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 01 | Mechanical Drawing | 2 | 1 | 3 | 64 |
| EL 21 | Alternating Current Fundamentals | 4 | 5 | 3 | 128 |
| EL 32 | Basic Electronics | 3 | 4 | 0 | 64 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | 16 | 17 | 7 | 384 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 02 | Engineering Drafting | 2 | 1 | 3 | 64 |
| EL 33 | Instrumentation-Applications I | 2 | 0 | 5 | 80 |
| EL 31 | Basic Electrical Construction Laboratory | 2 | 1 | 3 | 64 |
| EL 34 | Electric Motor Control | 3 | 3 | 3 | 96 |
| EL 35 | Residential Blueprint and Code | 3 | 3 | 1 | 64 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | | 16 | 12 | 15 | 432 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| EL 41 | Electrical Construction and Blueprint Reading | 3 | 4 | 3 | 112 |
| EL 45 | Advanced Electrical Theory | 3 | 4 | 0 | 64 |
| EL 46 | Electrical Systems Analysis | 2 | 2 | 2 | 64 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| PHY 32 | Physics-Heat and Light | 3 | 3 | 0 | 48 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 17 | 19 | 5 | 384 |

*Electives (General Studies): ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National, Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

Physical Education for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# ELECTRICAL CONSTRUCTION (EW)

*Certificate / Two Years*

If you have the desire and aptitudes to work in the electrical trades, but do not want to get involved in the more theoretical aspects of them, this is the program for you. You will study some mathematics, science, and communications skills, but program stress is placed on the manual skills which you will need to install wiring and electrical equipment in buildings with the aid of blueprints.

**Types of Jobs:** Electrical construction union apprentice, industrial maintenance and construction electrician; self-employment in residential and commercial wiring and in electrical shops; electrical tester or inspector; power company employee.

**Job Opportunities:** Unlimited with good to excellent salaries and opportunities for advancement and industry-financed education.

FIRST SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| EL 12 | Basic Wiring Laboratory | 1 | 5 | 96 |
| EL 18 | Accident Prevention | 2 | 0 | 32 |
| EW 11 | Direct Current Fundamentals | 5 | 5 | 160 |
| EW 18 | Motor Rewinding | 0 | 6 | 96 |
| ENG 01 | Communications or ENG 11 | 3 | 0 | 48 |
| MAT 10 | General Mathematics or MAT 20 | 3 | 0 | 48 |
| | | 14 | 16 | 480 |

SECOND SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| ED 01 | Mechanical Drawing | 1 | 3 | 64 |
| EW 21 | Alternating Current Fundamentals | 4 | 5 | 160 |
| EW 28 | Motor Rewinding | 0 | 6 | 96 |
| EW 32 | Basic Electronics | 4 | 0 | 64 |
| ENG 02 | Communications or ENG 12 | 3 | 0 | 48 |
| MAT 20 | Algebra or *MAT Elective | 3 | 0 | 48 |
| | | 15 | 14 | 480 |

THIRD SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| ED 02 | Engineering Drafting | 1 | 3 | 64 |
| EW 31 | Basic Electrical Construction Lab | 0 | 7 | 112 |
| EW 33 | Basic Electronics Lab | 0 | 6 | 96 |
| EW 34 | Electric Motor Control | 3 | 3 | 96 |
| EW 35 | Residential Blueprint and Code | 4 | 0 | 64 |
| PHY 20 | Physical Science | 3 | 0 | 48 |
| | | 11 | 19 | 480 |

FOURTH SEMESTER

| | Course | Hours Per Week Lect. | Lab. Practicum | Total Hours Sem. |
|---|---|---|---|---|
| EW 41 | Commercial and Industrial Blueprint Reading | 4 | 0 | 64 |
| EW 44 | Advanced Electrical Construction | 1 | 8 | 144 |
| EW 45 | Electrical Machinery | 2 | 2 | 64 |
| EW 46 | Electrical Equipment Repairs | 2 | 2 | 64 |
| EW 47 | Motor Rewinding and Repairs | 0 | 6 | 96 |
| ECO 02 | Economics or ECO 11 | 3 | 0 | 48 |
| | | 12 | 18 | 480 |

***Electives:** MAT 03 Basic Geometry; MAT 13 Intermediate Algebra; MAT 21 Trigonometry.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics; one year of science.

# COURSE DESCRIPTIONS / *electrical department*

CS 01 INTRODUCTION TO DATA PROCESSING

For course description, see Computer Science Department, page 111.

ECO 02 ECONOMICS

For course description, see Economics Department, page 128.

ECO 11 ECONOMICS

For course description, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING

For course description, see Drafting Department, page 123.

ED 02 ENGINEERING DRAFTING

For course description, see Drafting Department, page 124.

EI '33 INSTRUMENTATION – APPLICATIONS I

For course description, see Electronics Department, page 139.

EL 11 DIRECT CURRENT FUNDAMENTALS 4 Cr. - 128 Hrs.

Electrical laws and formulas as related to batteries, electrostatics, electrical instruments, direct current machinery; emphasis on mathematical concepts in electrical theories.

EL 12 BASIC WIRING LAB 2 Cr. - 96 Hrs.

Lab course in tools and materials of trade; proper use and care of hand tools; instruction in wiring of these basic circuits; residential lighting and receptacle circuits, low voltage switching and control circuits; use of electrical underwriters rules in color coding.

EL 18 ACCIDENT PREVENTION 2 Cr. - 32 Hrs.

Principles of accident prevention in industry and electrical safety procedures in all human activities; lifesaving techniques.

EL 21 ALTERNATING CURRENT FUND. 4 Cr. - 128 Hrs.

Laws, formulas, and fundamentals of alternating electricity; machinery; lab projects; hook-up of electrical equipment and meters.

EL 31 BASIC ELECTRICAL CONSTRUCTION LAB. 2 Cr. - 64 Hrs.

Mounting of conduit and other electrical raceways for installation of switches, receptacles, lights, heating equipment motors and control equipment; planning electrical construction jobs.

EL 32 BASIC ELECTRONICS 3 Cr. - 64 Hrs.

Study of electron tube and semiconductor principles, characteristics and problems; lecture-demonstration sessions: gaseous rectifiers, silican controlled rectifiers, phototubes, saturable reactors, electronic power supplies, amplifiers, oscillators, detectors, motor control circuits, and servo-mechanisms.

EL 34 ELECTRIC MOTOR CONTROLS 3 Cr. - 96 Hrs.

Reading and drawing of control circuit diagrams; hooking up direct current and alternating current motor control equipment; study of principles of rotating and magnetic amplifiers and static control.

EL 35 RESIDENTIAL BLUEPRINT AND CODE 3 Cr. - 64 Hrs.

Planning and drawing of residential wiring systems; calculating size and number of circuits needed for electrical heating calculations and remote control.

EL 41 ELECTRICAL CONSTRUCTION AND BLUEPRINT READING 3 Cr. - 112 Hrs.

Blueprint reading and circuit planning of electrical construction in factories and commercial buildings; stress on engineering of circuits by use of mathematics, electrical code, tables.

EL 44 ADVANCED ELECTRICAL CONSTRUCTION 3 Cr. - 144 Hrs.

Use of electrical construction blueprints for large buildings; duties of the electrical construction technician; phases of electrical work for journeyman trade.

EL 45 ADVANCED ELECTRICAL THEORY 3 Cr. - 64 Hrs.

Solution of network problems and problems involving charge and discharge of capacitors; rotating vectors and other problems involving alternating electricity.

EL 46 ELECTRICAL SYSTEMS ANALYSIS 2 Cr. - 64 Hrs.

Analysis of electrical faults; trouble shooting techniques; use of oscilloscopes and meters; preventative maintenance.

ENG 01 COMMUNICATIONS

For course description, see English and Speech Department, page 42.

ENG 02 COMMUNICATIONS

For course description, see English and Speech Department, page 42.

ENG 11 LANGUAGE AND COMPOSITION

For course description, see English and Speech Department, page 42.

ENG 12 LANGUAGE AND COMPOSITION

For course description, see English and Speech Department, page 42.

ENG 14 SPEECH

For course description, see English and Speech Department, page 42.

EW 11 DIRECT CURRENT FUNDAMENTALS 160 Hrs.

Study of basic electrical laws, electrical terms, batteries, electro-statics, electrical meters and instruments, direct-current machinery.

EW 18 MOTOR REWINDING 96 Hrs.

Electrical and mechanical features of various single phase motors; lab work developing knowledge and skill in rewinding and repairing single phase motors.

EW 21 ALTERNATING CURRENT FUNDAMENTALS 160 Hrs.

Study of nature of alternating current electricity as related to residential, commercial and industrial power use; laws and formulas needed for the solution of problems in the use of AC

power; study of AC machinery; lab work for demonstrating AC electrical principles; practical experience in hookup of equipment and instruments.

EW 28 MOTOR REWINDING 96 Hrs.

Emphasis on skill and speed in rewinding and assembling single phase motors; repairing or rewinding of one or more types of motor armatures.

EW 31 BASIC ELECTRICAL CONSTRUCTION LAB 112 Hrs.

Experience in the use and installation of electrical materials: house wiring circuits, wiring boxes of many kinds, armored cable, wire mold and romex, fluorescent and incandescent light switches and receptacle circuits.

EW 32 BASIC ELECTRONICS 64 Hrs.

Study of the principles and the use of tubes and diodes in industrial electronic equipment such as rectifiers and motor control circuits.

EW 33 BASIC ELECTRONICS LAB 96 Hrs.

Construction of basic electronic circuits; proper use of hand tools, wiring and electronic components, soldering and cable lacing; techniques of using multimeters and other testing equipment.

EW 34 ELECTRIC MOTOR CONTROL 96 Hrs.

Lab assignments involving wiring of starting and control equipment for DC and AC motors including start-stop, forward-reverse and jogging push button stations, speed controls, plugging and dynamic braking circuits; hook-up of various types of servo motors to show application in industry.

EW 35 RESIDENTIAL BLUEPRINT AND CODE 64 Hrs.

Study of residential wiring circuits, low voltage remote control switching and electric heating; study of the National Electrical Code book and its provisions dealing with residential and other types of wiring.

EW 38 MOTOR REWINDING 288 Hrs.

Rewinding, repairing and assembling of three-phase motors, direct-current armatures, field coils.

EW 41 COMMERCIAL AND INDUSTRIAL BLUEPRINT READING 64 Hrs.

Study of electrical construction planning for industry and commerce and relevant electrical code.

EW 44 ADVANCED ELECTRICAL CONSTRUCTION 144 Hrs.

Practice in installation of rigid conduit and other electrical wireways; pulling in and wiring of motor controllers and other electrical equipment; study of blueprints of large electrical construction jobs.

EW 45 ELECTRICAL MACHINERY 64 Hrs.

Review of electrical fundamentals machinery with lab work designed to increase skill in hooking up electrical machinery and meters.

EW 46 ELECTRICAL EQUIPMENT REPAIRS 64 Hrs.

Repair and adjustment of motor contractors; push button stations and relays; rewinding and phasing of small transformer coils, replacing of faulty rectifier plates; repairing lab equipment and other electrical equipment belonging to the college.

EW 47 MOTOR REWINDING AND REPAIRS 96 Hrs.

Development of additional skill and knowledge in rewinding and repair of single-phase and three-phase motors.

PHY 10 PHYSICAL SCIENCE

For course description, see Physics Department, page 192.

PHY 20 PHYSICAL SCIENCE

For course description, see Physics Department, page 192.

PHY 21 PHYSICS – MECHANICS

For course description, see Physics Department, page 192.

PHY 32 PHYSICS – HEAT AND LIGHT

For course description, see Physics Department, page 192.

MAT 03 BASIC GEOMETRY

For course description, see Mathematics Department, page 181.

MAT 10 GENERAL MATHEMATICS

For course description, see Mathematics Department, page 181.

MAT 13 INTERMEDIATE ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 20 ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY

For course description, see Mathematics Department, page 181.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

ENGLISH 201 OR 202 — HISTORY OF ENGLISH LITERATURE

For course descriptions, see English and Speech courses, page 42.

ENGLISH 211 — FUNDAMENTALS OF SPEECH

For course description, see English and Speech courses, page 42.

GOVERNMENT 201 — AMERICAN GOVERNMENT — NATIONAL

For course description, see Government courses, page 45.

GOVERNMENT 202 — STATE AND LOCAL GOVERNMENT

For course description, see Government courses, page 45.

HISTORY 201 —HISTORY OF THE UNITED STATES

For course description, see History courses, page 46.

PSYCHOLOGY 101 — GENERAL PSYCHOLOGY

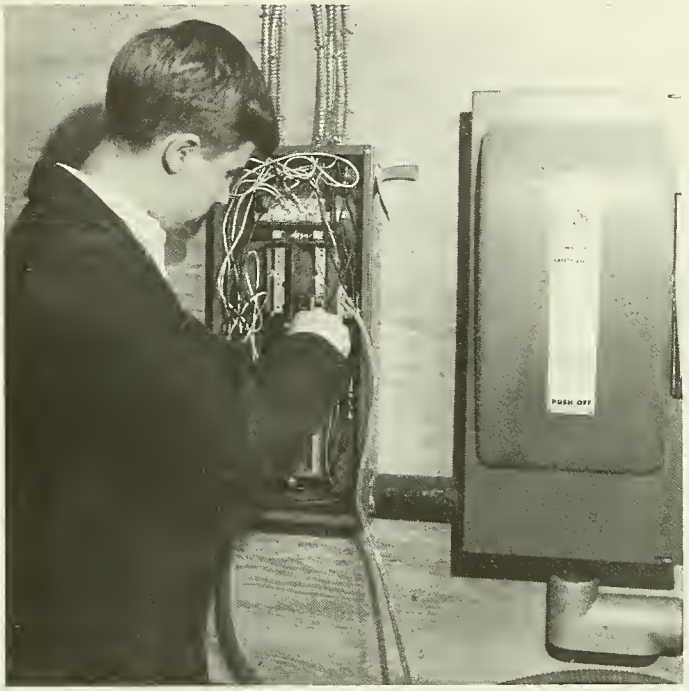
For course description, see Psychology courses, page 51.

SOCIOLOGY 101 — INTRODUCTION TO SOCIOLOGY

For course description, see Sociology courses, page 51.

SPANISH 101 OR 102 — BEGINNING SPANISH

For course descriptions, see Spanish courses, page 52.



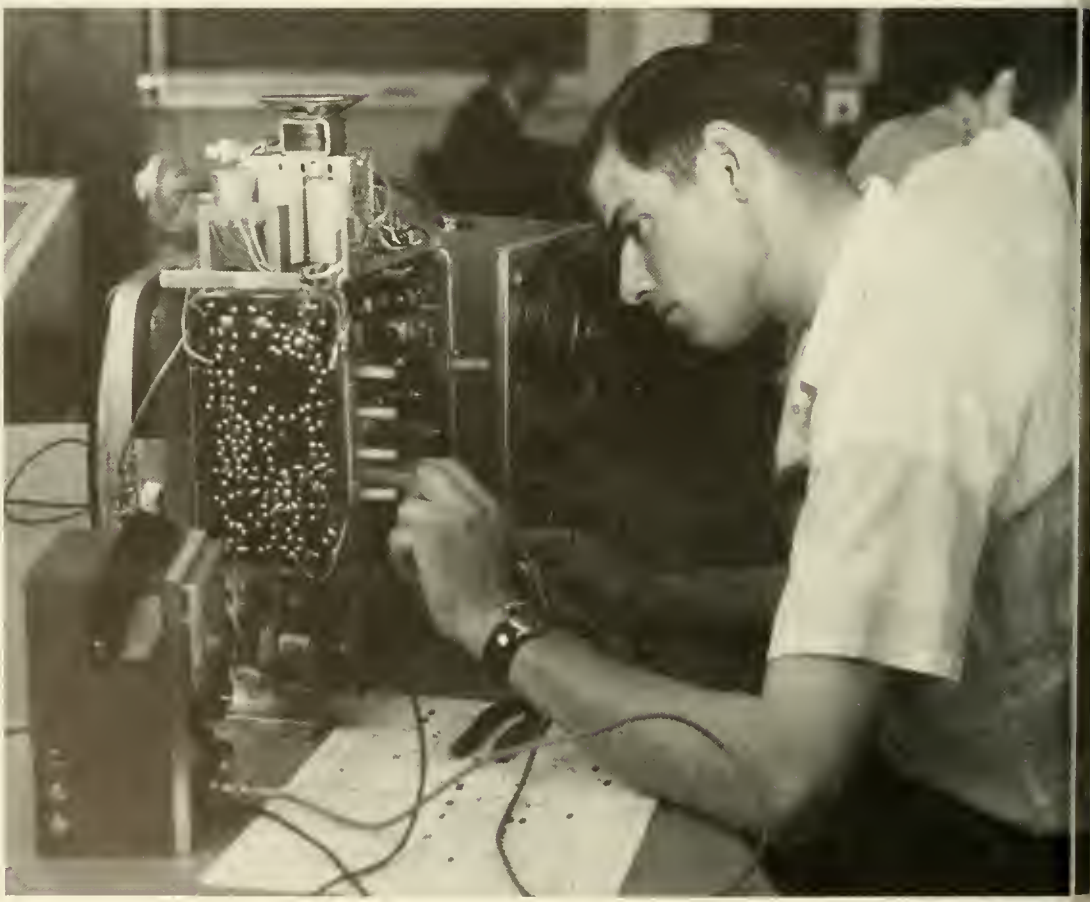
# ELECTRONICS DEPARTMENT / Career Programs

*CLINTON B. DAWES, Chairman*

Associate Degree

EI Electrical Instrumentation Technology

ET Electronics Technology



# ELECTRICAL INSTRUMENTATION TECHNOLOGY (EI)

*Associate Degree / Two Years*

Designed to meet industrial demands, the Electrical Instrumentation Program stresses electrical and electronic fundamentals as well as mathematics, science, and the principles of pheumatic and hydraulically operated equipment. Graduation from this program will qualify you as a technician capable of calibrating, repairing, and operating all types of electrical instruments for tests and plant operations.

**Types of Jobs:** Engineering aide; instrumentation service specialist; laboratory, research, electrical or electronic technician.

**Job Opportunities:** Good, with excellent starting salaries. Possibilities exist for continued education through company sponsorship.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ET 11 | Electronics-Theory I | 5 | 5 | 0 | 80 |
| ET 12 | Electronics-Applications I | 3 | 0 | 9 | 144 |
| ET 14 | Electrical Circuit Analysis | 3 | 3 | 0 | 48 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 18 | 15 | 10 | 400 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ET 21 | Electronics-Theory II | 5 | 5 | 0 | 80 |
| ET 22 | Electronics-Applications II | 3 | 0 | 9 | 144 |
| ET 23 | Basic Electronics Circuit Analysis | 3 | 3 | 0 | 48 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | 18 | 15 | 10 | 400 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| EI 31 | Instrumentation-Theory I | 3 | 3 | 1 | 64 |
| EI 33 | Instrumentation-Applications I | 2 | 0 | 5 | 80 |
| EI 35 | Basic Instrumentation Lab | 1 | 0 | 3 | 48 |
| ET 35 | Intermediate Electronics | 5 | 5 | 0 | 80 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | | 18 | 15 | 9 | 384 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 01 | Mechanical Drawing | 2 | 1 | 3 | 64 |
| EI 41 | Instrumentation-Theory II | 3 | 3 | 1 | 64 |
| EI 42 | Instrumentation-Applications II | 2 | 0 | 6 | 96 |
| EI 45 | Calibration and Standardization | 1 | 0 | 3 | 48 |
| EL 34 | Electric Motor Control | 3 | 3 | 3 | 96 |
| PHY 32 | Physics-Heat and Light | 3 | 3 | 0 | 48 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 17 | 13 | 16 | 464 |

*Electives (General Studies): ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# ELECTRONICS TECHNOLOGY (ET)

*Associate Degree / Two Years*

The Electronics Technology Program will prepare you to apply basic electronics theory to current practices, and it will help you to understand future developments as they take place. Through practical laboratory work with modern electronics equipment, you will learn to assist electrical engineers in the design, construction, installation, and testing of all kinds of electronic equipment.

**Types of Jobs:** Electronics engineering technician, electronic instrument technican, electronic laboratory technician, industrial electronic technician, production technician, and technical writer.

**Job Opportunities:** Excellent with good starting salaries and fringe benefits including opportunities for further industry-financed education.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ET 11 | Electronics-Theory I | 5 | 5 | 0 | 80 |
| ET 12 | Electronics-Applications I | 3 | 0 | 9 | 144 |
| ET 14 | Electrical Circuit Analysis | 3 | 3 | 0 | 48 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 18 | 15 | 10 | 400 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ET 21 | Electronics-Theory II | 5 | 5 | 0 | 80 |
| ET 22 | Electronics-Applications II | 3 | 0 | 9 | 144 |
| ET 23 | Basic Electronics Circuit Analysis | 3 | 3 | 0 | 48 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | 18 | 15 | 10 | 400 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ET 33 | Intermediate Electronics Circuit Analysis | 3 | 3 | 0 | 48 |
| ET 35 | Intermediate Electronics | 5 | 5 | 0 | 80 |
| ET 36 | Intermediate Electronics Lab | 3 | 0 | 9 | 144 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | | 18 | 15 | 9 | 384 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 01 | Mechanical Drawing | 2 | 1 | 3 | 64 |
| ET 45 | Advanced Electronics | 5 | 5 | 0 | 80 |
| ET 46 | Advanced Electronics Lab | 3 | 0 | 9 | 144 |
| PHY 32 | Physics-Heat and Light | 3 | 3 | 0 | 48 |
| | *Electronics Elective | 1-5 | 0-5 | 0-3 | 48-80 |
| | **Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 17-21 | 12-17 | 12-15 | 432-464 |

*Electronics Electives: EI 45 Calibration and Standardization; ET 44 Advanced Circuit Analysis.

**Electives (General Studies): ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry, one year of science.

# COURSE DESCRIPTIONS / *electronics department*

CS 01 INTRODUCTION TO DATA PROCESSING

For course description, see Computer Science Department, page 111.

ECO 11 ECONOMICS

For course description, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING

For course description, see Drafting Department, page 123.

ENG 11 LANGUAGE AND COMPOSITION

For course description, see English and Speech Department, page 42.

ENG 12 LANGUAGE AND COMPOSITION

For course description, see English and Speech Department, page 42.

ENG 14 SPEECH

For course description, see English and Speech Department, page 42.

EI 31 INSTRUMENTATION – THEORY I 3 Cr. - 64 Hrs.

Lecture-demonstration course in principles of electro-mechanical instruments; basic information on primary sensing elements; indicators, recorders, controllers, final control elements and mechanisms; variables such as temperature, pressure, liquid level, flow rate; problems involving instrumentation fundamentals.

EI 33 INSTRUMENTATION – APPLICATIONS I 2 Cr. - 80 Hrs.

Introduction to shop techniques starting with proper use of hand tools, wiring, soldering and cable lacing; construction and testing of basic electronic circuits; use of test equipment: multimeters, vacuum tube voltmeters, oscilloscopes and signal generators; documentation of test data.

EI 35 BASIC INSTRUMENTATION LAB 1 Cr. - 48 Hrs.

Introduction to pneumatic and hydraulic control devices; experiments in proper application, adjustment and repair of process control instruments, including indicators, recorders, and controllers.

EI 41 INSTRUMENTATION – THEORY II 3 Cr. - 64 Hrs.

Advanced course in measuring principles, transmission and telemetering, control systems, analytical instruments, potentiometer measurements and principles of closed-loop servo

systems; problems involving dynamic limitations of electronic systems, such as control lag, overshoot, stability and conversion of measured variables.

EI 42 INSTRUMENTATION – APPLICATIONS II 2 Cr. - 96 Hrs.

Application of control systems design in the laboratory; designing, building, testing separate control devices; ultimately setting up complete systems and logging data from systems; repair and maintenance procedures, applying trouble shooting techniques.

EI 45 CALIBRATION AND STANDARDIZATION 1 Cr. - 48 Hrs.

Lecture-demonstration-practice course involving principles of primary, secondary, shop standards; use of laboratory-type console; calibration of measuring instruments; periodic calibration of all measuring and control instruments.

EL 34 ELECTRIC MOTOR CONTROL

For course description, see Electrical Department, page 133.

ET 11 ELECTRONICS – THEORY I 5 Cr. - 80 Hrs.

Electricity and electronics theory including structure of matter, basic atomic theory, DC and AC, Ohm's Law, Kirchoff's Law; electrical calculations and formulas; magnetism and electromagnetism; vector analysis; resonance; electrical filters; measuring instruments.

ET 12 ELECTRONICS – APPLICATIONS I 3 Cr. - 144 Hrs.

Application of electronic concepts to component testing and identification, wiring electrical and electronic circuits; demonstration and laboratory work coupled with extensive use of electronic tools and equipment.
*Corequisite: ET 11.*

ET 14 ELECTRICAL CIRCUIT ANALYSIS 3 Cr. - 48 Hrs.

First of three or four semester sequential courses in analysis, tracing, and problem solving including close analysis of AC and DC circuits. Special emphasis on circuit tracing and solution of electrical problems using mathematical approaches.
*Corequisite: ET 11.*

ET 21 ELECTRONICS – THEORY II 5 Cr. - 80 Hrs.

Continuation of ET 11; basic theory covering vacuum tubes and solid state devices as well as circuits using these devices; advanced electrical and electronic measuring instruments.
*Prerequisites: ET 11, MAT 13.*

ET 22 ELECTRONICS – APPLICATIONS II 3 Cr. - 144 Hrs.

Continuation of ET 12; construction and testing of vacuum tube and solid state systems such as amplifiers, detectors; theory and operation of laboratory testing equipment including gain, distortion, frequency response and power output measurements.
*Prerequisite: ET 12.*
*Corequisite: ET 21.*

ET 23 BASIC ELECTRONICS CIRCUIT ANALYSIS 3 Cr. - 48 Hrs.

Continuation of ET 14; complete analysis of electronic circuits featuring design and component selections as well as more advanced circuit checking and testing.
*Prerequisite: ET 14.*
*Corequisite: ET 21.*

ET 33 INTERMEDIATE ELECTRONICS CIRCUIT ANALYSIS 3 Cr. - 48 Hrs.

Continuation of ET 23; closer analysis of more complicated circuitry including pulse techniques and pulse generators; blocking oscillators; multivibrators and shaping networks; integrating and differentiating networks.
*Prerequisite: ET 23.*
*Corequisite: ET 31.*

ET 35 INTERMEDIATE ELECTRONICS 5 Cr. - 80 Hrs.

Continuation of ET 21; detailed study of vacuum tube and solid state circuits and devices such as oscillators; transmitters; receivers; modulation systems; stereo systems; microwaves and wave propogation.
*Prerequisite: ET 21.*

ET 36 INTERMEDIATE ELECTRONICS LAB 3 Cr. - 144 Hrs.

Continuation of ET 22; construction and testing of more sophisticated vacuum tube and solid state equipment such as transmitters; FM and AM receivers; written laboratory reports.
*Prerequisite: ET 22.*
*Corequisite: ET 35.*

ET 44 ADVANCED CIRCUIT ANALYSIS 3 Cr. - 48 Hrs.

Close analysis of waves and pulses as found in color television; alignment of electronic circuits, including color television.
*Prerequisite: ET 33.*
*Corequisite: ET 45.*

ET 45 ADVANCED ELECTRONICS 5 Cr. - 80 Hrs.

Continuation of ET 35; complete study of cathode ray tubes as found in television cameras and receivers; television receivers; analysis of electrical wave shapes using the television signal as a source.
*Prerequisite: ET 35.*

ET 46 ADVANCED ELECTRONICS LAB 3 Cr. - 144 Hrs.

Continuation of ET 33; further analysis of television receivers; wide band oscilloscopes; laboratory equipment; visual alignment of circuits.
*Prerequisite: ET 36.*
*Corequisite: ET 45.*

MAT 13 INTERMEDIATE ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY

For course description, see Mathematics Department, page 181.

MAT 31 CALCULUS I

For course description, see Mathematics Department, page 182.

PHY 21 PHYSICS – MECHANICS

For course description, see Physics Department, page 192.

PHY 32 PHYSICS – HEAT AND LIGHT

For course description, see Physics Department, page 192.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

ENGLISH 201 OR 202 – HISTORY OF ENGLISH LITERATURE

For course descriptions, see English and Speech courses, page 42.

ENGLISH 211 – FUNDAMENTALS OF SPEECH

For course description, see English and Speech courses, page 42.

GOVERNMENT 201 – AMERICAN GOVERNMENT – NATIONAL

For course description, see Government courses, page 45.

GOVERNMENT 202 – STATE AND LOCAL GOVERNMENT

For course description, see Government courses, page 45.

HISTORY 201 – HISTORY OF THE UNITED STATES

For course description, see History courses, page 46.

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY

For course description, see Psychology courses, page 51.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY

For course description, see Sociology courses, page 51.

SPANISH 101 OR 102 – BEGINNING SPANISH

For course descriptions, see Spanish courses, page 52.

# FOOD SERVICE MANAGEMENT DEPARTMENT / Career Programs

*PATRICIA A. REIS, Chairman*

Associate Degree

FS Food Service Management

# FOOD SERVICE MANAGEMENT (FS)

## Associate Degree / Two Years

If you would like to be a food service supervisor or would like to assist dietitians, this is the program tailored for you. Fundamentals of food preparation, nutrition, organic chemistry, and work direction will be stressed in the program studies. As a graduate of the program, you will be entitled to apply for membership in the Hospital Institution and Educational Food Service Society, an organization recognized by the American Dietetic Association.

**Types of Jobs:** Foodservice supervisor, assistant dietitian, supervisor positions in hospitals, nursing homes, child care centers, schools, colleges, and restaurants.

**Job Opportunities:** Since the position of food service supervisor is relatively new, opportunities are unlimited. There is an urgent, widespread need for qualified people in the field, and advancements are dependent upon individual ability and interest.

FIRST SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BA | 12 | Accounting I | 3 | 3 | 1 | 64 |
| FS | 15 | Basic Food Theory and Preparation Techniques | 2 | 1 | 3 | 64 |
| FS | 16 | Introduction to Food Service Industries | 1 | 1 | 0 | 16 |
| FS | 17 | Nutrition I-Health | 3 | 3 | 0 | 48 |
| ENG | 11 | Language and Composition | 3 | 3 | 0 | 48 |
| | | Chemistry 101-Gen. Chem. | 4 | 3 | 3 | 96 |
| | | | 16 | 14 | 7 | 336 |

SECOND SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| FS | 05 | Quantity Foods I-Theory and Preparation Techniques | 3 | 2 | 3 | 80 |
| FS | 18 | Nutrition II-Menu Planning | 2 | 2 | 0 | 32 |
| ENG | 12 | Language and Composition | 3 | 3 | 0 | 48 |
| | | Chemistry 102-Gen. Chem. | 4 | 3 | 3 | 96 |
| | | Psychology 101-Gen. Psy. | 3 | 3 | 0 | 48 |
| | | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | | 18 | 16 | 6 | 352 |

THIRD SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BA | 22 | Accounting II | 3 | 3 | 1 | 64 |
| BM | 21 | Business Communications | 3 | 3 | 0 | 48 |
| FS | 19 | Quantity Foods II-Management Theory and Practice | 3 | 1 | 6 | 112 |
| FS | 20 | Food Purchasing, Storage and Sanitation | 3 | 3 | 0 | 48 |
| IM | 31 | Supervision-Human Relations | 3 | 3 | 0 | 48 |
| | | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | | 18 | 16 | 7 | 368 |

FOURTH SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BM | 13 | Principles of Business | 3 | 3 | 0 | 48 |
| FS | 22 | Beverage Management | 2 | 2 | 0 | 32 |
| FS | 23 | Food and Beverage Merchandising | 2 | 2 | 0 | 32 |
| FS | 24 | Experience Seminar | 3 | 1 | 6 | 112 |
| FS | 25 | Diet Therapy | 2 | 2 | 0 | 32 |
| IM | 40 | Work Simplification, Time Study and Incentives | 3 | 3 | 0 | 48 |
| | | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | | 18 | 16 | 6 | 352 |

***Electives (General Studies):** ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS01 - Introduction to Data Processing.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: One year of mathematics; one year of science.

# COURSE DESCRIPTIONS / *food service management department*

BA 12 ACCOUNTING I
For course description, see Business Administration Department, page 104

BA 22 ACCOUNTING II
For course description, see Business Administration Department, page 104.

BM 13 PRINCIPLES OF BUSINESS
For course description, see Business Administration Department, page 104.

BM 21 BUSINESS COMMUNICATIONS
For course description, see Business Administration Department, page 105.

CS 01 INTRODUCTION TO DATA PROCESSING
For course description, see Computer Science Department, page 111.

ENG 11 LANGUAGE AND COMPOSITION
For course description, see English and Speech Department, page 42.

ENG 12 LANGUAGE AND COMPOSITION
For course description, see English and Speech Department, page 42.

ENG 14 SPEECH
For course description, see English and Speech Department, page 42.

FS 05 QUANTITY FOODS I – THEORY AND PREPARATION TECHNIQUES 3 Cr. - 80 Hrs.
Introduction to large volume food servide institutions; emphasis on operational differences; study of food preparation processes; quantitative food preparation; standard recipes; weights and measures; equipment; timing selection, preparation, display, serving foods; sanitary practices.

FS 15 BASIC FOOD THEORY AND PREPARATION TECHNIQUES 2 Cr. - 64 Hrs.
Basic food nutrients and relationship to food preparation; cooking processes: meat, fish, poultry, egg, vegetable, sauce, soup cookery; terms.

FS 16 INTRODUCTION TO FOOD SERVICE INDUSTRIES 1 Cr. - 16 Hrs.
Food service industries: careers available; organization and management techniques; procedures in food service management; sanitation, safety, state and local health regulations; personal hygiene.

FS 17 NUTRITION I – HEALTH 3 Cr. - 48 Hrs.

History of science of nutrition; food nutrients and their function through digestion and absorption; functions of the body to physical fitness.

FS 18 NUTRITION II – MENU PLANNING 2 Cr. - 32 Hrs.

Nutritional meals for various age groups: economic, cultural, religious patterns; menus for commercial, industrial, school, institutional food services; food preferences of customers; merchandising techniques.

FS 19 QUANTITY FOODS II – MANAGEMENT THEORY AND PRACTICE 3 Cr. - 112 Hrs.

Advanced food service management and production: construction of work schedules, work simplifications, job analysis, labor and food cost controls, use of convenience foods, management of food service operations, supervision and training of personnel, menu planning, purchasing.

FS 20 FOOD PURCHASING, STORAGE AND SANITATION 3 Cr. - 48 Hrs.

Methods of buying, selection, standards and grades; factors influencing prices of meats, fish, poultry, fruits, vegetables; meat identification, meat buying including selection, grading, stamps; common can sizes and units of commercial measure; care of fresh, cooked and frozen meats, fish, poultry, fruits, vegetables; field trips; personal cleanliness, sanitary practices; cause, control and investigation of illnesses caused by food contamination; dishwashing; storage and refrigeration; sanitation of kitchen and equipment; cleansing materials; garbage and refuse disposal.

FS 22 BEVERAGE MANAGEMENT 2 Cr. - 32 Hrs.

Quality as applied to beverages, china, glassware, silver, linens, furnishings, equipment, supplies; purchase specifications, merchandising and management; waiter, waitresses, head waiter, hostess.

FS 23 FOOD AND BEVERAGE MERCHANDISING 2 Cr. - 32 Hrs.

Food and beverage service in food operation; foods work: catering to small parties, preparing unusual entrees, dining room arrangements, artistic production, service to gain customer satisfaction; trade journals, library journals.

FS 24 EXPERIENCE SEMINAR 3 Cr. - 112 Hrs.

Three hours per week, 16 weeks on-the-job training; one hour weekly seminar for discussion of practical experience.

FS 25 DIET THERAPY 2 Cr. - 32 Hrs.

Diet modifications for the acute and chronically ill.

IM 31 SUPERVISION – HUMAN RELATIONS

For course description, see Industrial Management Department, page 164.

IM 40 WORK SIMPLIFICATION, TIME STUDY AND INCENTIVES

For course description, see Industrial Management Department, page 164.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

CHEMISTRY 101 AND 102 – GENERAL CHEMISTRY

For course descriptions, see Chemistry courses, page 39.

ENGLISH 201 AND 202 – HISTORY OF ENGLISH LITERATURE

For course descriptions, see English and Speech courses, page 42.

ENGLISH 211 – FUNDAMENTALS OF SPEECH

For course description, see English and Speech courses, page 42.

GOVERNMENT 201 – AMERICAN GOVERNMENT – NATIONAL

For course description, see Government courses, page 45.

GOVERNMENT 202 – STATE AND LOCAL GOVERNMENT

For course description, see Government courses, page 45.

HISTORY 201 – HISTORY OF THE UNITED STATES

For course description, see History courses, page 46.

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY

For course description, see Psychology courses, page 51.

PSYCHOLOGY 210 – SOCIAL PSYCHOLOGY

For course description, see Psychology courses, page 51.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY

For course description, see Sociology courses, page 51.

SPANISH 101 OR 102 – BEGINNING SPANISH

For course descriptions, see Spanish courses, page 52.

# FORESTRY DEPARTMENT / Career Program

*JOSEPH G. SICK, Chairman*

Associate Degree
FR Forest Technology

# FOREST TECHNOLOGY (FR)

*Associate Degree / Two Years*

The forest technician's job is relatively new and was designed to meet the ever-increasing demand for trained personnel to assist professional foresters. The Forest Technology Program places emphasis on practical applications of technical theories to insure your employment in private or public forestry. You will find that field work is an important part of the program and that a broad range of scientific subjects are covered.

**Types of Jobs:** In public agencies: forest fire control; wildlife habitat improvement; maintenance of forest roads, structures and recreation areas; timber estimation; timber marking; and stand improvement. In private employment: pulpwood or sanitimber procurement, timber estimation, planning and construction of forest roads, supervision of logging operations, and location and survey of forest property lines.

**Job Opportunities:** Most public forestry agencies now include positions for technicians and your background of forest land management and use will provide you not only with employment opportunities but also opportunity for advancement.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| FR 10 | Introduction to Forestry | 1 | 1 | 0 | 16 |
| FR 11 | Dendrology | 3 | 2 | 3 | 80 |
| FR 13 | Forest Mensuration | 3 | 2 | 3 | 80 |
| FR 14 | Forest Botany | 3 | 3 | 0 | 48 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 17 | 15 | 7 | 352 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| FR 22 | Forest Surveying I | 3 | 1 | 6 | 112 |
| FR 25 | Forest Ecology | 3 | 2 | 3 | 80 |
| FR 28 | Advanced Forest Mensuration | 3 | 2 | 3 | 80 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | 16 | 12 | 13 | 400 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| BM 13 | Principles of Business | 3 | 3 | 0 | 48 |
| FR 31 | Wildlife Management | 3 | 2 | 3 | 80 |
| FR 32 | Forest Surveying II | 3 | 2 | 3 | 80 |
| FR 33 | Equipment and Machinery | 3 | 2 | 3 | 80 |
| FR 36 | Timber Harvesting | 3 | 2 | 3 | 80 |
| FR 37 | Forest Protection | 2 | 2 | 0 | 32 |
| | | 17 | 13 | 12 | 400 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| FR 42 | Forest Products | 3 | 2 | 3 | 80 |
| FR 44 | Forest Land Management | 3 | 2 | 3 | 80 |
| FR 45 | Forest and Recreation Improvements | 3 | 2 | 3 | 80 |
| FR 46 | Silviculture | 3 | 2 | 3 | 80 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| | *Elective | 3 | 3 | 0 | 48 |
| | | 18 | 14 | 12 | 416 |

*Electives: Sociology 101 - Introduction to Sociology; ENG 14 Speech; Geology 202 - Principles of Geomorphology; Geography 101 - Physical Geography.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry.

# COURSE DESCRIPTIONS / *forestry department*

BM 13 PRINCIPLES OF BUSINESS

For course description, see Business Administration Department, page 104.

ECO 11 ECONOMICS

For course description, see Economics Department, page 128.

ENG 11 LANGUAGE AND COMPOSITION

For course description, see English and Speech Department, page 42.

ENG 12 LANGUAGE AND COMPOSITION

For course description, see English and Speech Department, page 42.

ENG 14 SPEECH

For course description, see English and Speech Department, page 42.

FR 10 INTRODUCTION TO FORESTRY 1 Cr. - 16 Hrs.

General review of historic role of United States forests leading to present use and importance to nation.

FR 11 DENDROLOGY 3 Cr. - 80 Hrs.

Classification, identification, and distribution of woody plants in the United States; emphasis on species of local commercial importance.

FR 13 FOREST MENSURATION 3 Cr. - 80 Hrs.

Measurement of standing trees, logs, and other cut wood products; determination of contents in terms of board and cubic feet, cords, and pounds; measurement of tree and forest growth.

FR 14 FOREST BOTANY 3 Cr. - 48 Hrs.

Study of plant anatomy and physiology with special reference to tree stem structure, identification of species based on macroscopic characteristics of the wood.

FR 22 FOREST SURVEYING I 3 Cr. - 112 Hrs.

Lettering and basic drafting techniques; introduction to plane surveying; compass and tape surveys and plotting.

FR 25 FOREST ECOLOGY 3 Cr. - 80 Hrs.

Study of forest as biological community; effects of environmental factors of soil upon forest community and individual trees.

FR 28 ADVANCED FOREST MENSURATION 3 Cr. - 80 Hrs.

Determination of quality of logs and trees; estimation of volumes of large timber areas by different sampling techniques; use and interpretation of aerial photos in forest surveys.

FR 31 WILDLIFE MANAGEMENT 3 Cr. - 80 Hrs.

Wildlife management and conservation; techniques of aging and sexing wildlife; habitat evulsion and improvement; relation of forest to wildlife management practices.

FR 32 FOREST SURVEYING II 3 Cr. - 80 Hrs.

Introduction to more precise surveying techniques for property and boundary surveys, computations and plotting.

FR 33 EQUIPMENT AND MACHINERY 3 Cr. - 80 Hrs.

Theory and practice in machinery: operation and maintenance of logging machinery; forest fire control equipment and related mechanical devices used in forest operations.

FR 36 TIMBER HARVESTING 3 Cr. - 80 Hrs.

Analysis and problems in felling, skidding and transportation of timber products from woods to manufacturing point; application of modern logging methods and techniques: breakdown of entire tree stems into lengths and units of highest economic values.

FR 37 FOREST PROTECTION 2 Cr. - 32 Hrs.

Principles and methods related to causes, effects, control of forest fires; identification, effects, control of other harmful agents: insects, diseases.

FR 42 FOREST PRODUCTS 3 Cr. - 80 Hrs.

Conversion of round timber products into semi-finished state; manufacture of raw materials into finished consumer products; seasoning of lumber; preservative treatments of wood.

FR 44 FOREST LAND MANAGEMENT 3 Cr. - 80 Hrs.

Administration and management (single and coordinated multiple use) of public and privately owned forest lands for purposes of timber production, recreation use, wildlife and water.

FR 45 FOREST AND RECREATION IMPROVEMENTS 3 Cr. - 80 Hrs.

Design, application and construction of simple engineering structures: logging roads, trails, bridges, erosion control devices, drainage structures, and various recreation facilities.

FR 46 SILVICULTURE 3 Cr. - 80 Hrs.

Controlling forest establishment; composition and growth of major forest types in Northeastern United States.

MAT 13 INTERMEDIATE ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY

For course description, see Mathematics Department, page 181.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

GEOGRAPHY 101 – PHYSICAL GEOGRAPHY

For course description, see Geography courses, page 43.

GEOLOGY 202 – PRINCIPLES OF GEOMORPHOLOGY

For course description, see Geology courses, page 44.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY

For course description, see Sociology courses, page 51.

# GRAPHIC ARTS DEPARTMENT / Career Programs

*JOHN H. HILSHER, JR., Chairman*

Associate Degree

GA Graphic Arts

Certificate

PG Printing

# GRAPHIC ARTS (GA)

## Associate Degree / Two Years

Top salaries are commanded by men in printing and the Graphic Arts Program will provide you with a firm understanding of highly diversified backshop operations along with management, marketing and supervisory training. Practical laboratory work with modern graphic arts equipment will give you a sound background in areas of composition, makeup, photo processes, imposition and stripping, platemaking, presswork and bindery.

**Types of Jobs:** Graphic arts executive trainees, in-plant supervisors, foremen, self-employed printers, marketing and technical sales' services.

**Job Opportunities:** Numerous with excellent starting salaries and opportunities for further industry-financed education.

FIRST SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BM | 13 | Principles of Business | 3 | 3 | 0 | 48 |
| BS | 09 | *Typewriting | 1 | 1 | 2 | 48 |
| ED | 01 | Mechanical Drawing | 2 | 1 | 3 | 64 |
| GA | 10 | Reproduction Processes I | 1 | 1 | 1 | 32 |
| GA | 11 | Preparation for Copy Reproduction | 3 | 1 | 6 | 112 |
| GA | 12 | Principles of Typographic Design | 3 | 1 | 6 | 112 |
| MAT | 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | | 17 | 12 | 19 | 496 |

SECOND SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BA | 13 | Applied Accounting-Managerial | 3 | 3 | 0 | 48 |
| GA | 20 | Reproduction Processes II | 1 | 1 | 1 | 32 |
| GA | 23 | Process Camera | 3 | 1 | 6 | 112 |
| GA | 24 | Imposition and Stripping | 3 | 1 | 6 | 112 |
| ENG | 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT | 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | | 17 | 13 | 14 | 432 |

THIRD SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| GA | 30 | Reproduction Processes III | 1 | 1 | 1 | 32 |
| GA | 35 | Platemaking Processes | 3 | 1 | 6 | 112 |
| GA | 36 | Printing Press Operation | 3 | 1 | 6 | 112 |
| IM | 31 | Supervision-Human Relations | 3 | 3 | 0 | 48 |
| ENG | 12 | Language and Composition | 3 | 3 | 0 | 48 |
| PHY | 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | | | 17 | 13 | 13 | 416 |

FOURTH SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| CS | 02 | Introduction to Computer Language | 3 | 2 | 2 | 64 |
| GA | 40 | Printing Estimating Practices | 3 | 1 | 6 | 112 |
| GA | 41 | Printing Production Practices | 4 | 1 | 10 | 176 |
| | | **Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | **Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | | 16 | 10 | 18 | 448 |

*Upon evidence of typing proficiency, this requirement (BS 09) may be waived by Department Chairman.

**Electives (General Studies): ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS01 Introduction to Data Processing; Chemistry 100 - Introduction to Chemistry.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# PRINTING (PG)

*Certificate / Two Years*

The Printing Program is designed to train you for the many and complex operations and occupations involved in modern printing. Training emphasis is on the specific occupation for which you show aptitude and interest, but all printing operations are covered to insure your versatility in the field.

**Types of Jobs:** Cameraman, stripper, layout man, compositor, platemaker, and pressman.

**Job Opportunities:** Good with excellent starting salaries.

FIRST SEMESTER

| Course | | | Hours Per Week Lect. | Hours Per Week Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| BS | 09 | *Typewriting | 1 | 2 | 48 |
| PG | 11 | Copy Preparation I | 2 | 9 | 176 |
| PG | 12 | Typographic Composition I | 2 | 12 | 224 |
| ENG | 01 | Communications or English 11 | 3 | 0 | 48 |
| MAT | 10 | General Mathematics or MAT 20 | 3 | 0 | 48 |
| | | | 11 | 23 | 544 |

SECOND SEMESTER

| Course | | | Hours Per Week Lect. | Hours Per Week Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED | 01 | Mechanical Drawing | 1 | 3 | 64 |
| PG | 23 | Photo Process I | 2 | 11 | 208 |
| PG | 24 | Imposition and Stripping I | 2 | 11 | 208 |
| MAT | 20 | Algebra or *MAT Elective | 3 | 0 | 48 |
| | | | 8 | 25 | 528 |

THIRD SEMESTER

| Course | | | Hours Per Week Lect. | Hours Per Week Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| PG | 35 | Platemaking I | 2 | 6 | 128 |
| PG | 36 | Press Operation I | 2 | 15 | 272 |
| ECO | 02 | Economics or ECO 11 | 3 | 0 | 48 |
| ENG | 02 | Communications or ENG 12 | 3 | 0 | 48 |
| PHY | 20 | Physical Science or PHY 21 | 3/4 | 0 | 48/64 |
| | | | 13/14 | 21 | 544/560 |

FOURTH SEMESTER

| Course | | | Hours Per Week Lect. | Hours Per Week Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| BM | 47 | Small Business Management | 3 | 0 | 48 |
| PG | 40 | Materials of Printing Production | 2 | 1 | 48 |
| | | **Printing Elective | 2 | 10 | 192 |
| | | **Printing Elective | 2 | 10 | 192 |
| | | | 9 | 21 | 480 |

*Upon evidence of typing proficiency, this requirement (BS 09) may be waived by Department Chairman.

**Electives: PG 41 Copy Preparation II; PG 42 Typographic Composition II; PG 43 Photo Process II; PG 44 Imposition and Stripping II; PG 45 Platemaking II; PG 46 Press Operation II; MAT 03 Basic Geometry; MAT 13 Intermediate Algebra; MAT 21 Trigonometry.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics; one year of science.

# COURSE DESCRIPTIONS / *graphic arts department*

BA 13 APPLIED ACCOUNTING – MANAGERIAL
For course description, see Business Administration Department, page 104.

BM 13 PRINCIPLES OF BUSINESS
For course description, see Business Administration Department, page 104.

BM 47 SMALL BUSINESS MANAGEMENT
For course description, see Business Administration Department, page 105.

BS 09 TYPEWRITING
For course description, see Business Administration Department, page 105.

CS 01 INTRODUCTION TO DATA PROCESSING
For course description, see Computer Science Department, page 111.

CS 02 INTRODUCTION TO COMPUTER LANGUAGE
For course description, see Computer Science Department, page 111.

ECO 02 ECONOMICS
For course description, see Economics Department, page 128.

ECO 11 ECONOMICS
For course description, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING
For course description, see Drafting Department, page 123.

ENG 01 COMMUNICATIONS
For course description, see English Department, page 42.

ENG 02 COMMUNICATIONS
For course description, see English Department, page 42.

ENG 11 LANGUAGE AND COMPOSITION
For course description, see English Department, page 42.

ENG 12 LANGUAGE AND COMPOSITION
For course description, see English Department, page 42.

ENG 14 SPEECH
For course description, see English and Speech Department, page 42.

GA 10 REPRODUCTION PROCESSES I 1 Cr. - 32 Hrs.
Introduction to equipment and materials used in various fields of printing and publishing; desirable qualifications of worker.

GA 11 PREPARATION FOR COPY REPRO. 3 Cr. - 112 Hrs.
Analysis of materials, tools and techniques used in preparation of copy for reproduction; paste-up and color separation overlays.

GA 12 PRINCIPLES OF TYPOGRAPHIC DESIGN 3 Cr. - 112 Hrs.
Training in conventional and modern layouts as applied to solution of problems in printing typography.

GA 20 REPRODUCTION PROCESSES II 1 Cr. - 32 Hrs.
Methods of photographic reproduction of engineering drawings, direct image, stabilization process, photo fabrication and microfilming.

GA 23 PROCESS CAMERA 3 Cr. - 112 Hrs.
Concepts and techniques of darkroom procedures for reproduction of line and halftone copy on process cameras.

GA 24 IMPOSITION AND STRIPPING 3 Cr. - 112 Hrs.
Consideration of binding and register requirements to assure quality control of various stripping mediums and formats.

GA 30 REPRODUCTION PROCESSES III 1 Cr. - 32 Hrs.
Concepts of letterpress, letterset, lithography, intaglio, flexography, gravure and screen process in relation to printing production requirements of graphic arts industry.

GA 35 PLATEMAKING PROCESSES 3 Cr. - 112 Hrs.
Knowledge of deep-etch and surface platemaking processes; preparation, exposure techniques; methods and tools for making corrections; plate troubles, causes, and remedies.

GA 36 PRINTING PRESS OPERATION 3 Cr. - 112 Hrs.
Correlation of printing press operation; ink mixing and matching; registration; preventive maintenance for quality analyses.

GA 40 PRINTING ESTIMATING PRACTICES 3 Cr. - 112 Hrs.
Lab class offering experience in estimating jobs, writing specifications, and planning jobs for production.

GA 41 PRINTING PRODUCTION PRACTICES 4 Cr. - 176 Hrs.
Lab instruction relating to studies in first three semesters; firsthand opportunity to forecast production, route and plan, schedule, dispatch, inspect, control stores and stock; material handling, personnel management and industrial engineering.

IM 20 INDUSTRIAL ORGANIZATION AND MANAGEMENT
For course description, see Industrial Management Department, page 164.

IM 31 SUPERVISION – HUMAN RELATIONS
For course description, see Industrial Management Department, page 164.

IM 43 GOVERNMENT AND BUSINESS
For course description, see Industrial Management Department, page 164.

MAT 03 BASIC GEOMETRY
For course description, see Mathematics Department, page 181.

MAT 10 GENERAL MATHEMATICS
For course description, see Mathematics Department, page 181.

MAT 13 INTERMEDIATE ALGEBRA
For course description, see Mathematics Department, page 181.

MAT 20 ALGEBRA
For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY
For course description, see Mathematics Department, page 181.

PG 11 COPY PREPARATION I 176 Hrs.
Analysis of copy; preparation of roughs and working layouts; arrangement and paste-up of art work, photographic and typographic material.

PG 12 TYPOGRAPHIC COMPOSITION I 224 Hrs.
Fundamentals, application, operation and routine care of composing machines; essentials of copy markup and proofreading.

PG 23 PHOTO PROCESS I 208 Hrs.
Theory and lab experiences on process cameras for reproduction of line and halftone copy; procedures in processing and contact printing.

PG 24 IMPOSITION AND STRIPPING I 208 Hrs.
Imposition: theory and practice of folding, binding, and register methods; stripping: procedures and mediums used in photographic expedients for various formats.

PG 35 PLATEMAKING I 128 Hrs.
Theory and lab experiences relating to various types of plates and processing procedures; essentials of precise registration.

PG 36 PRESS OPERATION I 272 Hrs.
Theory and lab experiences in preparation and operation of pressroom equipment; essentials of preventive maintenance.

PG 40 MATERIALS OF PRINTING PRODUCTION 48 Hrs.
Properties of papers and inks used in printing industry; printers' measurements, proportion, percentage; paper sizes and computations used in connection with printing production.

PG 41 COPY PREPARATION II 192 Hrs.
Advanced copy-fitting and preparation of roughs and working layouts; advanced mechanical assemblies; overlays and preseparation of color.
*Prerequisite: PG 11.*

PG 42 TYPOGRAPHIC COMPOSITION II 192 Hrs.
Lab experiences and exercises on photo, cold and hot composition machines; photo-composing of heads and ads; justified text.
*Prerequisite: PG 12.*

PG 43 PHOTO PROCESS II 192 Hrs.
Advanced theory and lab experiences on process cameras; densitometry, color separation, masking requirements and color proofing systems.
*Prerequisite: PG 23.*

PG 44 IMPOSITION AND STRIPPING II 192 Hrs.
Imposition: advanced procedures used in pagination; stripping: extension of techniques and procedures in single and multi-color forms.
*Prerequisite: PG 24.*

PG 45 PLATEMAKING II 192 Hrs.
Advanced course in platemaking procedures for various types of plates and proofing materials; experience providing application of various types of systems to insure register.
*Prerequisite: PG 35.*

PG 46 PRESS OPERATION II 192 Hrs.
Advanced course in press setup for various formats including work and turn, work and tumble, sheet wise forms, and exercises in four-color process printing.
*Prerequisite: PG 36.*

PHY 20 PHYSICAL SCIENCE
For course description, see Physics Department, page 192.

PHY 21 PHYSICS – MECHANICS
For course description, see Physics Department, page 192.

PHY 32 PHYSICS – HEAT AND LIGHT
For course description, see Physics Department, page 192.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

CHEMISTRY 100 – INTRODUCTION TO CHEMISTRY
For course description, see Chemistry courses, page 39.

ENGLISH 201 OR 202 – HISTORY OF ENGLISH LITERATURE
For course descriptions, see English and Speech courses, page 42.

ENGLISH 211 – FUNDAMENTALS OF SPEECH
For course description, see English and Speech courses, page 42.

GOVERNMENT 201 – AMERICAN GOVERNMENT – NATIONAL
For course description, see Government courses, page 45.

GOVERNMENT 202 – STATE AND LOCAL GOVERNMENT
For course description, see Government courses, page 45.

HISTORY 201 – HISTORY OF THE UNITED STATES
For course description, see History courses, page 46.

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY
For course description, see Psychology courses, page 51.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY
For course description, see Sociology courses, page 51.

SPANISH 101 OR 102 – BEGINNING SPANISH
For course descriptions, see Spanish courses, page 52.

# HEALTH OCCUPATIONS DEPARTMENT / Career Programs

*THELMA S. MORRIS, Chairman*

Certificate

PN Practical Nursing
ST Surgical Technician

# PRACTICAL NURSING PROGRAM (PN)

*Certificate / 52 Weeks*

The Practical Nursing Program will prepare you to plan and administer total nursing care to selected individuals, such as the sub-acutely ill, the chronically ill, the convalescent, and the handicapped of all ages. You will be qualified to assist the professional nurse in her more technical responsibilities. Pre-Clinical Instruction, taught at the College, consists of basic nursing theories and the development of skills that must be applied. Clinical experience under College supervision at both the Divine Providence Hospital and the Williamsport Hospital is provided.

**Types of Jobs:** Employment in hospitals, convalescent homes, visiting nurses' associations, doctors' offices, private duty.

**Job Opportunities:** Excellent with steadily increasing salaries.

*The Practical Nursing Program is designed to prepare students to sit for the Licensed Practical Nurse Examination of the Pennsylvania State Board of Nurse Examiners.*

PRE-CLINICAL INSTRUCTION

| | | *Course* | *Total Hours* |
|---|---|---|---|
| PN | 11 | Personal and Vocational Relationships | 30 |
| PN | 12 | Body Structure and Function | 60 |
| PN | 13 | Personal and Community Health | 34 |
| PN | 14 | The Family | 30 |
| PN | 15 | Nutrition and Diet Therapy | 30 |
| PN | 16 | Nursing Skills-Basic and Advanced | 296 |
| PN | 17 | Introduction to Conditions of Illness | 30 |
| PN | 19 | Directed Study | 85 |
| | | | 595 |

CLINICAL INSTRUCTION

| | | *Course* | *Total Hours* |
|---|---|---|---|
| PN | 21 | Clinical Experience in the Care of Adult Patients Including Geriatrics | 880 |
| PN | 22 | Clinical Experience in Maternity Nursing | 240 |
| PN | 23 | Clinical Experience in Pediatric Nursing | 160 |
| | | | 1280 |

New students are admitted to this Program in September and March.

Recommended high school subjects: Two years of mathematics and one year of science.

# SURGICAL TECHNICIAN PROGRAM (ST)

*Certificate / 40 Weeks*

Completion of this program will enable you to function as a skilled technician whose duties include care, preparation and maintenance of sterile and unsterile supplies, and assisting registered nurses in the preparation of operating rooms for surgery in "scrub in" and "circulating" assignments.

**Types of Jobs:** Members of surgical teams in hospital operating rooms and central service departments or other areas closely concerned with the principles and practices of surgical asepsis.

**Job Opportunities:** Good and increasing.

*The Surgical Technician Program follows the recommendations of the Technical Manual compiled by the Association of Operating Room Nurses.*

FIRST TERM – SIXTEEN WEEKS

| | | Course | Total Hours |
|---|---|---|---|
| ST | 10 | Personal Adjustments | 40 |
| ST | 12 | Body Structure and Function | 100 |
| ST | 13 | Principles of Asepsis | 50 |
| ST | 14 | Sterilization and Care of Supplies | 50 |
| ST | 15 | Operating Room Techniques | 136 |
| ST | 16 | Operating Room Laboratory | 136 |
| ENG | 01 | Communications | 48 |
| | | | 560 |

SECOND TERM – SIXTEEN WEEKS

| | | Course | Total Hours |
|---|---|---|---|
| ST | 21 | Surgical Procedures | 64 |
| ST | 22 | Supervised Clinical Experience | 496 |
| | | | 560 |

THIRD TERM – EIGHT WEEKS

| | | Course | Total Hours |
|---|---|---|---|
| ST | 23 | Surgical Procedures | 32 |
| ST | 24 | Supervised Clinical Experience | 248 |
| | | | 280 |

New students are admitted to the Surgical Technician Program in September only.

Recommended high school subjects: Two years of mathematics; one year of science.

# COURSE DESCRIPTIONS / *health occupations department*

ENG 01 COMMUNICATIONS 48 Hrs.

For course description, see English and Speech Department, page 42.

PN 11 PERSONAL AND VOCATIONAL RELATIONSHIPS 30 Hrs.

Orientation, study skills, communications; fundamentals of ethical, psychological, social and human relationships; vocational, legal, religious implications in nursing; nursing history and organizations.

PN 12 BODY STRUCTURE AND FUNCTION 60 Hrs.

A study of basic human anatomy and physiology as a foundation for safe, intelligent, nursing care and the development of nursing skills; principles of chemistry, microbiology and physics.

PN 13 PERSONAL AND COMMUNITY HEALTH 34 Hrs.

Study of the fundamental principles related to the maintenance of personal and community health, including public health laws and methods involved in the prevention and control of diseases.

PN 14 THE FAMILY 30 Hrs.

The family and its function in contemporary society including normal growth and development of the child from birth through adolescence, characteristics of the aging process, and promotion of an environment which is conducive to mental and physical health.

PN 15 NUTRITION AND DIET THERAPY 30 Hrs.

A study of the body's normal nutrition requirements and the modifications of these requirements during illness.

PN 16 NURSING SKILLS – BASIC AND ADVANCED 296 Hrs.

Theory and clinical practice in bedside nursing; drugs and solutions; principles underlying nursing skills providing the foundation for safe nursing care for patients of all ages; diversional activities essential to patient's immediate and long-term needs.

PN 17 INTRODUCTION TO CONDITIONS OF ILLNESS — 30 Hrs.

A symptomatic approach to illness in which the general deviations from normal body functions are considered together with such nursing problems as may arise from functional disturbances. A study of etiology, pathology, symptomatology, diagnostic procedures and methods of treatment.

PN 19 DIRECTED STUDY — 85 Hrs.

Study projects under supervision of instructors.

PN 21 CLINICAL EXPERIENCE IN THE CARE OF ADULT PATIENTS INCLUDING GERIATRICS — 880 Hrs.

Surgical patients, including recovery room; medical patients, including mental health; observation and experience in physical therapy, central supply and intensive care units; diet and nutrition therapy. Concurrent planned instruction in theory of medical-surgical nursing.

PN 22 CLINICAL EXPERIENCE IN MATERNITY NURSING — 240 Hrs.

Care of mothers and newborns, including prenatal and postnatal care, experience and obseravtion in labor and delivery, prenatal clinics, mothers' clubs. Thirty hours of concurrent instruction.

PN 23 CLINICAL EXPERIENCE IN PEDIATRIC NURSING — 160 Hrs.

Nursing care of the child; childhood illnesses. Twenty hours of concurrent instruction.

ST 10 PERSONAL ADJUSTMENTS — 40 Hrs.

Legal, ethical and moral responsibilities; personal health and hygiene; history, philosophy and purpose of the hospital and operating room.

ST 12 BODY STRUCTURE AND FUNCTION — 100 Hrs.

Basic structure and function of the human body; deviations from the normal that necessitate surgery; care of specimens.

ST 13 PRINCIPLES OF ASEPSIS — 50 Hrs.

History of asepsis; principles and application of bacteriology as related to sound practice of aseptic techniques; responsibility for carrying out strict aseptic techniques.

ST 14 STERILIZATION AND CARE OF SUPPLIES — 50 Hrs.

Kinds, methods, and mechanics of sterilization and supplies.

ST 15 OPERATING ROOM TECHNIQUES — 136 Hrs.

Principles of pre-operative care and safety of patient; development of skills as member of operating room team; basic concepts of anesthesiology; relationship to the patient; use of records.

ST 16 OPERATING ROOM LABORATORY — 136 Hrs.

Beginning skills: preliminary preparation of the patient, duties of circulating and scrub assistant; demonstrations, return demonstrations and practice; selected clinical experience.

ST 21 SURGICAL PROCEDURES — 64 Hrs.

Care of the patient in general, ear, nose and throat, gynealogical, orthopedic, eye and genito-urinary surgery, peroral endoscopy.
*Prerequisites: ST 10, ST 12, ST 13, ST 14, ST 15, ST 16.*

ST 22 SUPERVISED CLINICAL EXPERIENCE — 496 Hrs.

Intermediate skills: circulating and scrub assistant duties; housekeeping techniques applicable to the O.R. Suite. Concurrent with ST 21.

ST 23 SURGICAL PROCEDURES — 32 Hrs.

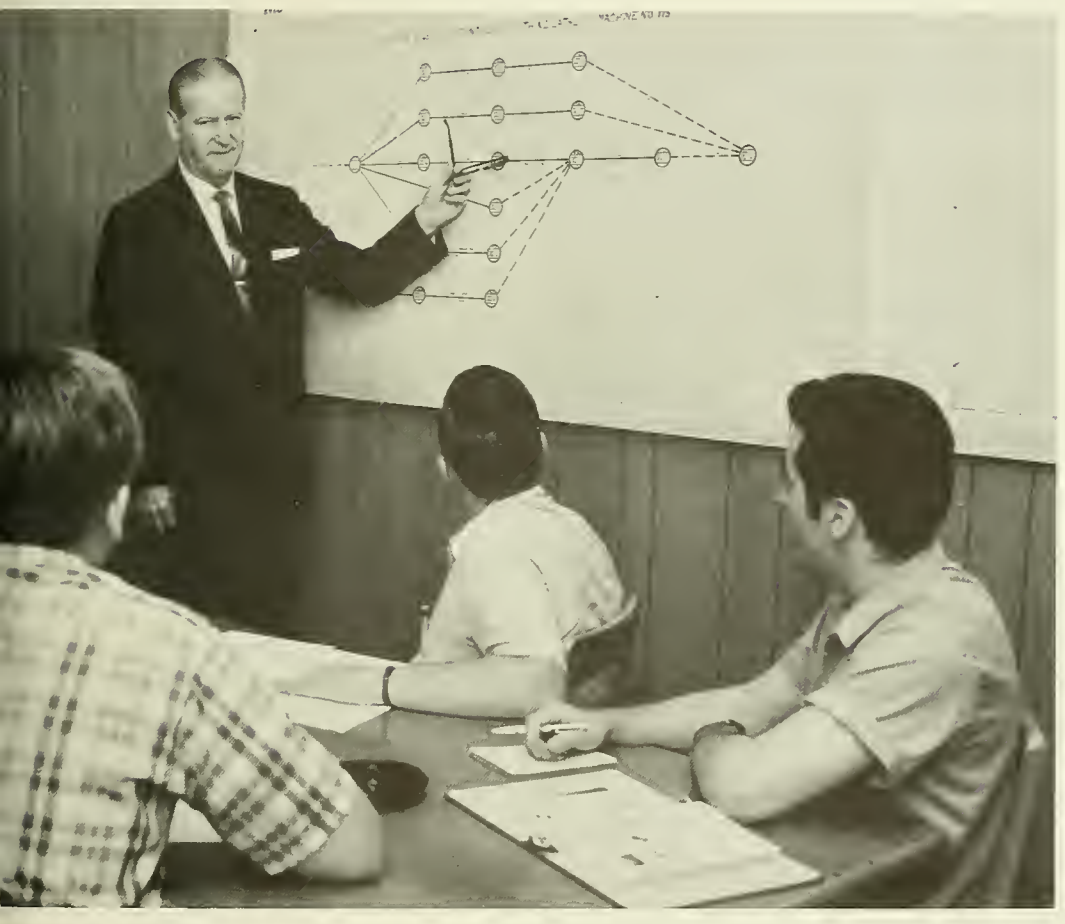
Care of the patient in plastic, chest, neurological, and cardiovascular surgery.
*Prerequisites: ST 21, ST 22.*

ST 24 SUPERVISED CLINICAL EXPERIENCE — 248 Hrs.

Advanced skills as member of operating room team. Concurrent with ST 23.

# INDUSTRIAL MANAGEMENT DEPARTMENT / Career Program

*C. EDWARD WELSH, Chairman*



Associate Degree

IM Industrial Management

# INDUSTRIAL MANAGEMENT (IM)

*Associate Degree / Two Years*

The Industrial Management Program is designed to give you a basic understanding of modern theory and practice in effective utilization and control of personnel, materials, and money in the industrial process. The courses provide an opportunity to develop familiarity in the practical application of learned theory. Training in fundamental business and management principles, supplemented by technical skills, will prepare you well for entry positions in operating management or in many administrative areas of industry.

**Types of Jobs:** Management trainee assistant, supervisor, quality control manager, technician, buyer, production control manager, personnel assistant, time and motion study technician, production planner, maintenance manager, and safety director.

**Job Opportunities:** Unlimited with excellent starting salaries and better than average opportunity for rapid advancement.

FIRST SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BA | 12 | Accounting I | 3 | 3 | 1 | 64 |
| BS | 09 | *Typewriting | 1 | 1 | 2 | 48 |
| ED | 22 | Drafting and Sketching | 3 | 2 | 4 | 96 |
| IM | 13 | Introduction to Industrial Management | 3 | 3 | 0 | 48 |
| ENG | 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT | 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | | 17 | 16 | 8 | 384 |

SECOND SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| IM | 20 | Industrial Organization and Management | 3 | 3 | 0 | 48 |
| ECO | 46 | Economics | 3 | 3 | 0 | 48 |
| ENG | 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT | 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | **Elective | 3 | 0-1 | 6-9 | 112-144 |
| | | | 16 | 13-14 | 7-10 | 336-368 |

THIRD SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| IM | 31 | Supervision-Human Relations | 3 | 3 | 0 | 48 |
| IM | 41 | Industrial and Public Relations | 3 | 3 | 0 | 48 |
| PHY | 21 | Physics-Mechanics Mathematics 201-Statistical Analysis | 4 | 4 | 0 | 64 |
| | | | 3 | 3 | 0 | 48 |
| | | **Elective | 3-5 | 1-5 | 6-9 | 80-144 |
| | | | 16-18 | 14-18 | 6-9 | 288-352 |

FOURTH SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| CS | 01 | Introduction to Data Processing | 3 | 3 | 1 | 64 |
| IM | 40 | Work Simplification, Time Study and Incentives | 3 | 3 | 0 | 48 |
| IM | 42 | Production, Quality and Cost Control | 2 | 2 | 0 | 32 |
| IM | 43 | Government and Industry | 2 | 2 | 0 | 32 |
| IM | 44 | Industrial Safety | 2 | 2 | 1 | 48 |
| IM | 47 | Industrial Psychology | 3 | 3 | 0 | 48 |
| | | ***Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | | 18 | 18 | 2 | 320 |

*Upon evidence of typing proficiency, this requirement (BS 09) may be waived by Department Chairman.

**Electives: EL 11 Direct Current Fundamentals: EL 12 Basic Wiring Lab; IM 21 Wood Processing I; IM 22 Machine Shop Practice I; ET 21 Electronics - Theory II; IM 32 Wood Processing II; IM 34 Acetylene Welding - Theory and Practice; SM 10 Basic Sheet Metal (Hand/Machine); EI 31 Instrumentation - Theory I; IM 45 Electric Welding - Theory and Practice; PHY 22 Introduction to Metallurgy; IM 46 Tape Controlled Machine Tools; BM 36 Marketing; BM 31 Business Law; JO 19 Reading and Comprehension Improvement.

***Electives (General Studies): ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry, one year of science.

# COURSE DESCRIPTIONS / *industrial management department*

BA 12 ACCOUTING I

For course description, see Business Administration Department, page 104.

BM 13 PRINCIPLES OF BUSINESS

For course description, see Business Administration Department, page 104.

BM 31 BUSINESS LAW

For course description, see Business Administration Department, page 105.

BM 36 MARKETING

For course description, see Business Administration Department, page 105.

BS 09 TYPEWRITING

For course description, see Business Administration Department, page 105.

CS 01 INTRODUCTION TO DATA PROCESSING

For course description, see Computer Science Department, page 111.

ECO 46 ECONOMICS

For course description, see Economics Department, page 128.

ED 22 DRAFTING AND SKETCHING

For course description, see Drafting Department, page 124.

EI 31 INSTRUMENTATION – THEORY I

For course description, see Electronics Department, page 139.

EL 11 DIRECT CURRENT FUNDAMENTALS

For course description, see Electrical Department, page 132.

EL 12 BASIC WIRING LAB

For course description, see Electrical Department, page 132.

ENG 11
AND 12 LANGUAGE AND COMPOSITION

For course description, see English and Speech courses, page 42.

ENG 14 SPEECH

For course description, see English and Speech courses, page 42.

ET 21 ELECTRONICS – THEORY II

For course description, see Electronics Department, page 140.

IM 13 INTRODUCTION TO INDUSTRIAL MANAGEMENT 3 Cr. - 48 Hrs.

Study of opportunities in industry; structure and operation of proprietorships, partnerships, and corporations; financial problems and policies; operating ethics.

IM 20 INDUSTRIAL ORGANIZATION AND MANAGEMENT 3 Cr. - 48 Hrs.

Structure of proprietorship, partnership, and corporation; methods of establishing and financing; elements of organization; principles of authority, accountability and responsibility; introduction to scientific approach to management decision-making.

*IM 21 WOOD PROCESSING I 3 Cr. - 112 Hrs.

Identification, properties, and application of various wood species; introduction to use, care, and setup of basic tools and equipment of wood processing industry; assembly, gluing, and clamping; shop safety.

*IM 22 MACHINE SHOP PRACTICE I 3 Cr. - 112 Hrs.

Introduction to use, care and setup of basic tools and equipment of machine shop—hand and power—including engine lathe, milling machine, shaper; shop safety.

IM 31 SUPERVISION – HUMAN RELATIONS 3 Cr. - 48 Hrs.

Analysis of concepts of supervision and its inter-personal relationships; recognition of and basic techniques for discharge of supervisory responsibility—planning, organizing, training, motivating, directing, controlling, communicating, and coordinating.

*IM 32 WOOD PROCESSING II 3 Cr. - 112 Hrs.

Production techniques of wood processing industry; jigs and fixtures; use, care and setup of specialty equipment; knife layout and grinding; laminating and bending; finishing.

*IM 33 MACHINE SHOP PRACTICE II 3 Cr. - 112 Hrs.

Advanced work with engine lathe and introduction to use, care and setup of turret lathe and automatic screw machine; production line techniques; quality and time standards.

*IM 34 ACETYLENE WELDING – THEORY AND PRACTICE 3 Cr. - 112 Hrs.

Basic acetylene welding of the five general types of joints in flat, vertical, horizontal and overhead positions; brazing and freehand cutting; production line techniques.

IM 40 WORK SIMPLIFICATION, TIME STUDY AND INCENTIVES 3 Cr. - 48 Hrs.

Manual motions, work place layouts, production job analysis and evaluation; work simplification and time study; establishing work loads; presenting work standards, changes in job content, work loads to employees; piece work rates, bonuses and other incentives.

IM 41 INDUSTRIAL AND PUBLIC RELATIONS 3 Cr. - 48 Hrs.

Trade unions and labor laws; essentials of contract negotiation and interpretation; grievance procedures and arbitration; employee relations applied to welfare, safety, compensation, benefits, job satisfaction; establishing and maintaining company image.

IM 42 PRODUCTION, QUALITY AND COST CONTROL 2 Cr. - 32 Hrs.

Introduction to and application of quantitative approach to management decisions; planning and control concepts; inputs for control systems; PERT: linear programming, budgets, goals and objectives.

IM 43 GOVERNMENT AND INDUSTRY 2 Cr. - 32 Hrs.

History, nature, and scope of governmental role in business environment; study of selected statutes, agencies, and other control and assistance media.

IM 44 INDUSTRIAL SAFETY 2 Cr. - 48 Hrs.

Safety and protection of employees and company property; developing safety-consciousness; nature and recognition of hazards; protective devices and equipment; first aid.

*IM 45 ELECTRIC WELDING – THEORY AND PRACTICE 3 Cr. - 112 Hrs.

Basic electric welding of general types of joints with different types and sizes of electrodes; electric welding on production line.

*When enrollment is sufficient, instruction specifically designed to meet Industrial Management requirements is provided by the Building Construction, Machine Shop, and Welding departments.

*IM 46 TAPE CONTROLLED MACHINE TOOLS 3 Cr. - 48 Hrs.

Theory of application of tape control to machine tools and production process: present and future.

IM 47 INDUSTRIAL PSYCHOLOGY 3 Cr. - 48 Hrs.

Study of individual differences in industry; analysis of human needs and morale; selecting, testing, training, and motivating employees; evaluating and improving personal effectiveness; factors affecting employee efficiency and safety.

JO 19 READING COMPREHENSION AND IMPROVEMENT

For course description, see Journalism and Broadcasting Department, page 170.

MAT 13 INTERMEDIATE ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY

For course description, see Mathematics Department, page 181.

PHY 21 PHYSICS – MECHANICS

For course description, see Physics Department, page 192.

PHY 22 INTRODUCTION TO METALLURGY

For course description, see Physics Department, page 192.

SM 10 BASIC SHEET METAL (HAND/MACHINE)

For course description, see Sheet Metal Department, page 200.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

ENGLISH 201 OR 202 – HISTORY OF ENGLISH LITERATURE

For course descriptions, see English and Speech courses, page 42.

ENGLISH 211 – FUNDAMENTALS OF SPEECH

For course description, see English and Speech courses, page 42.

GOVERNMENT 201 – AMERICAN GOVERNMENT – NATIONAL

For course description, see Government courses, page 45.

GOVERNMENT 202 – STATE AND LOCAL GOVERNMENT GOVERNMENT

For course description, see Government courses, page 45.

HISTORY 201 – HISTORY OF THE UNITED STATES

For course description, see History courses, page 46.

MATHEMATICS 201 – STATISTICAL ANALYSIS

For course description, see Mathematics courses, page 47.

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY

For course description, see Psychology courses, page 51.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY

For course description, see Sociology courses, page 51.

SPANISH 101 OR 102 – BEGINNING SPANISH

For course descriptions, see Spanish courses, page 52.

*When enrollment is sufficient, instruction specifically designed to meet Industrial Management requirements is provided by the Building Construction, Machine Shop, and Welding departments.

# JOURNALISM AND BROADCASTING DEPARTMENT / Career Programs

*SLOAN O'DONNELL, Chairman*

Associate Degree

BR Broadcasting

JO Journalism

# BROADCASTING (BR)

## Associate Degree / Two Years

Broadcasting is a world of instant news. This may be the field for you. As a radio announcer you will be in a key position in the field of communications. Announcers and newsmen from nearby radio stations will teach modern broadcasting techniques using the College's radio studio and closed-circuit television system. Background courses in history, government, economics, sociology, and psychology will enrich you and give you a head start if you should wish to seek a baccalaureate degree later.

**Types of Jobs:** Radio announcer, disc jockey, news commentator, public relations assistant, advertising copywriter.

**Job Opportunities:** Unlimited. Radio stations throughout the state are looking for qualified broadcasters, and opportunities for advancement in both radio and television are excellent.

FIRST SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BS | 10 | Typewriting | 2 | 2 | 3 | 80 |
| JO | 10 | News Writing | 3 | 2 | 2 | 64 |
| JO | 19 | Reading and Comprehension Improvement | 2 | 1 | 2 | 48 |
| | | English 101 - English Composition | 3 | 3 | 0 | 48 |
| | | English 211 - Fundamentals of Speech | 3 | 3 | 0 | 48 |
| | | Government 201 - American-National | 3 | 3 | 0 | 48 |
| | | | 16 | 14 | 7 | 336 |

SECOND SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BR | 10 | Introduction to Announcing | 3 | 1 | 4 | 80 |
| BR | 11 | Basic Electronics and FCC Licensing | 2 | 1 | 4 | 80 |
| BR | 21 | In-Service Training | 2 | 0 | 6 | 96 |
| | | Government 202 - State and Local | 3 | 3 | 0 | 48 |
| | | History 202 - History of the United States | 3 | 3 | 0 | 48 |
| | | Sociology 101 - Introduction to Sociology | 3 | 3 | 0 | 48 |
| | | | 16 | 11 | 14 | 400 |

THIRD SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BR | 12 | Advanced Announcing | 3 | 1 | 4 | 80 |
| BR | 13 | Radio Programming | 3 | 1 | 4 | 80 |
| BR | 22 | In-Service Training | 2 | 0 | 6 | 96 |
| JO | 15 | Fine Arts Seminar | 1 | 1 | 0 | 16 |
| | | Economics 201 - Principles of Economics | 3 | 3 | 0 | 48 |
| | | *Elective | 3/4 | 3/4 | 0 | 48/64 |
| | | | 15/16 | 9/10 | 14 | 368/384 |

FOURTH SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BR | 14 | Station Management and Community Responsibility | 3 | 3 | 0 | 48 |
| BR | 15 | Broadcast Advertising - Local and National | 3 | 1 | 4 | 80 |
| BR | 23 | In-Service Training | 2 | 0 | 6 | 96 |
| JO | 18 | Science Seminar | 1 | 1 | 0 | 16 |
| | | Psychology 101 - General Psychology | 3 | 3 | 0 | 48 |
| | | *Elective | 3/4 | 3/4 | 0 | 48/64 |
| | | | 15/16 | 11/12 | 10 | 336/352 |

*To be taken in the School of Liberal Arts and Sciences.

Students taking Journalism and Broadcasting must take College Boards.

Students receiving a 3.0 or better average in their first year may take special electives with the Dean's permission.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects and activities: Speech, broadcasting, journalism, drama, and students publications.

# JOURNALISM (JO)

## *Associate Degree / Two Years*

You will find that the Journalism Program emphasizes a "central core" of practical courses in news and feature story writing, news photography, editing, copywriting, and community responsibility, all taught by practicing newsmen in the area. To aid you as a future newsman, background courses in history, government, economics, sociology, and psychology are included in the program. Also, if you should wish to seek a baccalaureate degree at a later date, the liberal arts background courses are fully transferable to four-year institutions.

Types of Jobs: Newspaper reporter, advertising copywriter, public relations assistant, news photographer, magazine research assistant.

Job Opportunities: Newspapers throughout the state and nation need qualified newsmen, and opportunities for advancement are excellent.

FIRST SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| BS | 10 | Typewriting | 2 | 2 | 3 | 80 |
| JO | 10 | News Writing | 3 | 2 | 2 | 64 |
| JO | 19 | Reading and Comprehension Improvement | 2 | 1 | 2 | 48 |
| | | English 101 - English Composition | 3 | 3 | 0 | 48 |
| | | English 211 - Fundamentals of Speech | 3 | 3 | 0 | 48 |
| | | Government 201 - American - National | 3 | 3 | 0 | 48 |
| | | | 16 | 14 | 7 | 336 |

SECOND SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| JO | 11 | Photography for Newsmen | 2 | 0 | 5 | 80 |
| JO | 12 | News Reporting | 3 | 2 | 2 | 64 |
| JO | 21 | In-Service Training | 2 | 0 | 6 | 96 |
| | | Government 202 - State and Local | 3 | 3 | 0 | 48 |
| | | History 202 - History of the United States | 3 | 3 | 0 | 48 |
| | | Sociology 101 - Introduction to Sociology | 3 | 3 | 0 | 48 |
| | | | 16 | 11 | 13 | 384 |

THIRD SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| JO | 13 | Feature Writing | 3 | 1 | 4 | 80 |
| JO | 14 | Editing | 3 | 1 | 4 | 80 |
| JO | 15 | Fine Arts Seminar | 1 | 1 | 0 | 16 |
| JO | 22 | In-Service Training (Advanced) | 2 | 0 | 6 | 96 |
| | | Economics 201 - Principles of Economics | 3 | 3 | 0 | 48 |
| | | *Elective | 3/4 | 3/4 | 0 | 48/64 |
| | | | 15/16 | 9/10 | 14 | 368/384 |

FOURTH SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| JO | 16 | Newspaper Management and Community Responsibility | 3 | 3 | 0 | 48 |
| JO | 17 | Advertising - Basic Layouts | 3 | 1 | 4 | 80 |
| JO | 18 | Science Seminar | 1 | 1 | 0 | 16 |
| JO | 23 | In-Service Training (Advanced) | 2 | 0 | 6 | 96 |
| | | Psychology 101 - General Psychology | 3 | 3 | 0 | 48 |
| | | *Elective | 3/4 | 3/4 | 0 | 48/64 |
| | | | 15/16 | 11/12 | 10 | 336/352 |

*To be taken in the School of Liberal Arts and Sciences.

Students taking Journalism and Broadcasting must take College Boards.

Students receiving a 3.0 or better average in their first year may take special electives with the Dean's permission.

Physical Education for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects and activities: Speech, broadcasting, journalism, drama, and student publications.

# COURSE DESCRIPTIONS / *journalism & broadcasting department*

BR 10 INTRODUCTION TO ANNOUNCING 3 Cr. - 80 Hrs.

Principles of announcing; practice in reading, voice inflection, pronunciation of foreign names, and similar exercises; use of tape recorder in pre-recording repetitive items; lab instruction.

BR 11 BASIC ELECTRONICS AND FCC LICENSING 2 Cr. - 80 Hrs.

Fundamental mechanics of operation of tape recorders, turntables, network facilities, and multispeaker systems; mechanics necessary to obtain FCC licensing; field visits to at least five different stations.

BR 12 ADVANCED ANNOUNCING 3 Cr. - 80 Hrs.

Special techniques employed in sports announcing, "talk" programs, and interviews; lab practice; practice on College audio-visual equipment.

BR 13 RADIO PROGRAMMING 3 Cr. - 80 Hrs.

Determining basic character of a station; setting up a program to meet objectives; use of "public interest" programs and national, state, and local news to meet FCC requirements; maintaining balance between "talk" and "music" programs.

BR 14 STATION MANAGEMENT AND COMMUNITY RESPONSIBILITY 3 Cr. - 48 Hrs.

Study of problems related to serving community needs while making a profit; ratio of advertising to program time; character of station; meeting community responsibility through community interest programs; responsible use of editorial privilege.

BR 15 BROADCAST ADVERTISING — LOCAL AND NATIONAL 3 Cr. - 80 Hrs.

Techniques of creating effective advertising by correlating the seller and product with the most likely buyer; selection of time, type, and method of presentation; use of correlated national advertising.

BR 21 IN-SERVICE TRAINING 2 Cr. - 96 Hrs.

Supervised work with the College News Bureau in the preparation of taped news releases for local radio stations, or assignments to the College's closed-circuit television production teams.

BR 22 IN-SERVICE TRAINING 2 Cr. - 96 Hrs.

Advanced work with the College News Bureau in the preparation of "public service" programs for local radio stations, or more responsible assignments on closed-circuit television.

BR 23 IN-SERVICE TRAINING 2 Cr. - 96 Hrs.

Major assignments with the College News Bureau or the audio-visual closed-circuit television system including the total preparation of at least one program from conception to final production.

BS 10 TYPEWRITING

For course description, see Business Administration Department, page 105.

JO 10 NEWSWRITING 3 Cr. - 64 Hrs.

Incorporating the "Who?-What?-Why?-When?-How?" technique into news stories for radio and newspapers; two-hour lab where two or more typical news stories are written to meet "deadlines."

JO 11 PHOTOGRAPHY FOR NEWSMEN 2 Cr. - 80 Hrs.

Creating effective pictures for news stories and advertising; camera and darkroom techniques; lab practice.

JO 12 NEWS REPORTING 3 Cr. - 64 Hrs.

News reporting peculiar to newspapers; prosaic hospital news, obituaries, rural correspondents' stories, social news, police stories, court house sources; timeliness and accuracy.

JO 13 FEATURE WRITING 3 Cr. - 80 Hrs.

Techniques of employing reader analysis, research, in-depth interviews, photography, and graphic writing skills in feature and editorial preparation; lab practice.

JO 14 EDITING 3 Cr. - 80 Hrs.

Techniques of editing material for newspapers, magazines, and other publications; headline writing; copyreading; layout and typography; printing processes; lab practice.

JO 15 FINE ARTS SEMINAR 1 Cr. - 16 Hrs.

Eight two-hour lecture-discussion sessions conducted by visiting lecturers; may include art of the masters, modern art, sculpture, modern dance, opera, classical music, related areas.

JO 16 NEWSPAPER MANAGEMENT AND COMMUNITY RESPONSIBILITY 3 Cr. - 48 Hrs.

Inter-relation of news management, advertising, editorial policy, and community responsibility.

JO 17 ADVERTISING-BASIC LAYOUTS 3 Cr. - 80 Hrs.

Techniques of preparing and integrating advertising copy with pertinent illustrations in attractive format; lab practice.

JO 18 SCIENCE SEMINAR 1 Cr. - 16 Hrs.

Eight two-hour lecture-discussion sessions conducted by visiting lecturers; may include peaceful use of atomic power, stream pollution, air pollution, space exploration, undersea exploration, related areas.

JO 19 READING AND COMPREHENSION IMPROVEMENT 2 Cr. - 48 Hrs.

Practice designed to help students improve reading habits and remember ideas and details: previewing, skimming, paragraph reading, outlining.

JO 21 IN-SERVICE TRAINING 2 Cr. - 96 Hrs.

Supervised, on-the-job training with the College News Bureau or the Publications Department or on the staff of student publications.

JO 22 IN-SERVICE TRAINING (ADVANCED) 2 Cr. - 96 Hrs.

On-the-job training in the College News Bureau or Publications Department or on the staff of student publications. Students must have demonstrated the ability to handle writing assignments with minimum supervision.

JO 23 IN-SERVICE TRAINING (ADVANCED) 2 Cr. - 96 Hrs.

Editorial responsibilities on student publications or substantial assignments with the College News Bureau or Publications Department requiring initiative and proficiency.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

ECONOMICS 201 — PRINCIPLES OF ECONOMICS

For course description, see Economics courses, page 40.

ENGLISH 101 — ENGLISH COMPOSITION

For course description, see English and Speech courses, page 42.

ENGLISH 211 – FUNDAMENTALS OF SPEECH

For course description, see English and Speech courses, page 42.

GOVERNMENT 201 – AMERICAN GOVERNMENT – NATIONAL

For course description, see Government courses, page 45.

GOVERNMENT 202 – STATE AND LOCAL

For course description, see Government courses, page 45.

HISTORY 202 – HISTORY OF THE UNITED STATES

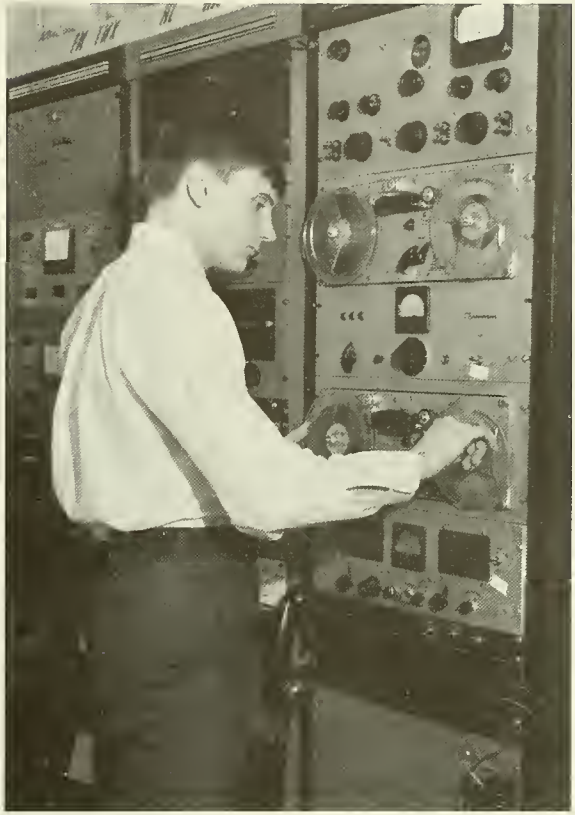
For course description, see History courses, page 46.

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY

For course description, see Psychology courses, page 51.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY

For course description, see Sociology courses, page 51.



# LIBRARY SCIENCE DEPARTMENT / Career Program

*DAVID P. SIEMSEN, Chairman*

Associate Degree
LS Library Assistant

# LIBRARY ASSISTANT (LS)

## Associate Degree / Two Years

The Library Assistant Program will prepare you for an interesting and challenging career in library work. It will make available to you positions in various types of libraries as an aide to the professional librarian. Practical experience in library work through the internship program, lectures, and related arts courses will qualify you to advance professionally.

**Types of Jobs:** Positions in public and special libraries; schools, colleges, and related firms.

**Job Opportunities:** Your specialized knowledge and skill will merit an above-average starting salary, and the growing need for qualified people in the library field will prepare you for immediate employment.

FIRST SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| LS | 10 | Introduction to Libraries and Books | 3 | 3 | 0 | 48 |
| LS | 11 | Internship I | 3 | 0 | 9 | 144 |
| LS | 15 | Technical Services I | 3 | 2 | 3 | 80 |
| BS | 10 | *Typewriting | 2 | 2 | 3 | 80 |
| | | Business Administration 205 - Automatic Data Processing | 3 | 3 | 1 | 64 |
| | | English 101 - English Composition | 3 | 3 | 0 | 48 |
| | | | 17 | 13 | 16 | 464 |

SECOND SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| LS | 21 | Internship II | 3 | 0 | 9 | 144 |
| LS | 30 | Technical Services II | 3 | 2 | 3 | 80 |
| LS | 41 | Introduction to Reference | 3 | 3 | 0 | 48 |
| BS | 20 | *Typewriting | 2 | 2 | 3 | 80 |
| | | History 101-World History | 3 | 3 | 0 | 48 |
| | | English 102-English Composition | 3 | 3 | 0 | 48 |
| | | | 17 | 13 | 15 | 448 |

THIRD SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| LS | 31 | Aids and Principles of Book Selection and Bibliography | 3 | 3 | 0 | 48 |
| | | Education 102-Children's and Young Adults' Literature | 3 | 3 | 0 | 48 |
| | | English 250-World Literature | 3 | 3 | 0 | 48 |
| | | Psychology 101-General Psychology | 3 | 3 | 0 | 48 |
| | | **Elective | 3-4 | 3-4 | 0 | 48-64 |
| | | | 15-16 | 15-16 | 0 | 240-256 |

FOURTH SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| LS | 40 | Books and Writers in Literature and Science | 3 | 3 | 0 | 48 |
| LS | 42 | Audio-Visual Materials | 2 | 2 | 0 | 32 |
| LS | 44 | The Library: Its Patrons and Purpose | 3 | 3 | 0 | 48 |
| BS | 23 | Office Practices | 2 | 2 | 1 | 48 |
| | | English 251-World Literature | 3 | 3 | 0 | 48 |
| | | **Elective (Foreign Language or Science) | 3-4 | 3-4 | 0 | 48-64 |
| | | | 16-17 | 16-17 | 1 | 272-288 |

*Upon evidence of typing proficiency, this requirement (BS 10) may be waived by Department Chairman.

**From Liberal Arts and Sciences.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: One year of mathematics; one year of science.

# COURSE DESCRIPTIONS / *library science department*

BS 10 TYPEWRITING

For course description, see Business Administration Department, page 105.

BS 20 TYPEWRITING

For course description, see Business Administration Department, page 106.

BS 23 OFFICE PRACTICES

For course description, see Business Administration Department, page 106.

LS 10 INTRODUCTION TO LIBRARIES AND BOOKS 3 Cr. - 48 Hrs.

Survey of historical development of books, libraries, and librarianship: evolution of alphabet; early forms of books; libraries in ancient world; middle ages and modern times; invention of printing.

LS 11 AND 21 INTERNSHIP I AND II 6 Cr. - 288 Hrs.

Practical experience in library activities: circulation, reference, registration; work in service areas: adult, children, reference, extension programs, bookmobile; observation made to determine area best suited for student.

LS 15 AND 30 TECHNICAL SERVICES I AND II 6 Cr. - 160 Hrs.

Theory and experience in tasks in general area of technical services: cataloging and classification, mechanical preparation of material, acquisition of material, maintenance of library material, book stock control, preparation for bindery.

LS 31 AIDS AND PRINCIPLES OF BOOK SELECTION AND BIBLIOGRAPHY 3 Cr. - 48 Hrs.

Introduction to principles of selection; basic aids and reference tools used; evaluation of a library's material in relation to its public.

LS 40 BOOKS AND WRITERS IN LITERATURE AND SCIENCE 3 Cr. - 48 Hrs.

Survey of major periods in history of world literature; familiarization with individual writers.

LS 41 INTRODUCTION TO REFERENCE 3 Cr. - 48 Hrs.

Philosophy and techniques of reference work; use of basic reference materials.

LS 42 AUDIO-VISUAL MATERIALS 2 Cr. - 32 Hrs.

Use of library film, recordings, duplicating devices and projection equipment.

LS 44 THE LIBRARY: ITS PATRONS AND PURPOSE 3 Cr. - 48 Hrs.

Examination of social relationships of library and library worker to patrons, community, country, college campus, public schools.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

BUSINESS ADMINISTRATION 205 — AUTOMATIC DATA PROCESSING

For course description, see Business Administration courses, page 39.

EDUCATION 102 — CHILDREN'S AND YOUNG ADULTS' LITERATURE

For course description, see Education courses, page 40.

ENGLISH 101 AND 102 — ENGLISH COMPOSITION

For course descriptions, see English and Speech courses, page 42.

ENGLISH 250 AND 251 — WORLD LITERATURE

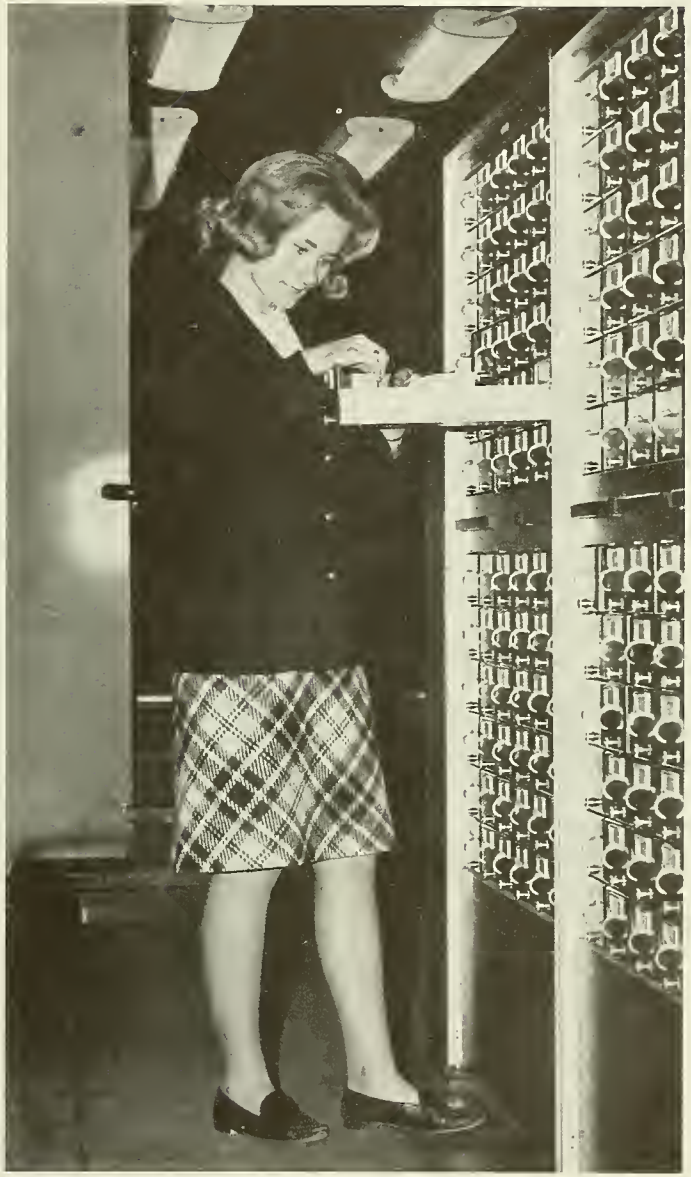
For course descriptions, see English and Speech courses, page 42.

HISTORY 101 — WORLD HISTORY

For course description, see History page 46.

PSYCHOLOGY 101 — GENERAL PSYCHOLOGY

For course description, see Psychology courses, page 51.



# MACHINE SHOP DEPARTMENT / Career Programs

*LYNN B. HARLAN, Chairman*

Associate Degree

TT Toolmaking Technology

Certificate

MG Machinist General

# TOOLMAKING TECHNOLOGY (TT)

## Associate Degree / Two Years

The Toolmaking Technology Program will prepare you to work with the engineer and shop superintendent or foreman. To ensure your efficiency, time will be spent in the lab or shop where you will be trained to develop machine operation skills. Emphasis will be given to laboratory or shop work where you will be trained in machine operation. Emphasis will also be placed on theory, blue print reading, and mechanical drawing. Routing of jobs and the sequence of operations, as well as related courses in mathematics, science, and economics are included to increase your advancement opportunities.

**Types of Jobs:** Toolmaker; experimental, numerical controller; production technician; administrative assistant.

**Job Opportunities:** Unlimited with excellent starting salaries and rapid advancement.

FIRST SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| TT | 10 | Bench/Drill Press | 2 | 1 | 3 | 64 |
| TT | 11 | Engine Lathe | 4 | 2 | 6 | 128 |
| TT | 12 | Milling Machine | 4 | 2 | 6 | 128 |
| TT | 13 | Shaper | 1 | 0 | 3 | 48 |
| ENG | 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT | 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | | 18 | 12 | 19 | 496 |

SECOND SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| ED | 01 | Mechanical Drawing | 2 | 1 | 3 | 64 |
| TT | 20 | Turret Lathe/Automatic Screw Machine | 4 | 1 | 7 | 128 |
| TT | 21 | Quality Control/Blueprint Reading | 4 | 2 | 6 | 128 |
| ENG | 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT | 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | | 17 | 11 | 17 | 448 |

THIRD SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| TT | 30 | Bench/Jig Borer | 2 | 1 | 5 | 96 |
| TT | 31 | Engine Lathe | 4 | 2 | 6 | 128 |
| TT | 32 | Milling Machine | 4 | 2 | 6 | 128 |
| ECO | 11 | Economics | 3 | 3 | 0 | 48 |
| PHY | 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | | | 17 | 12 | 17 | 464 |

FOURTH SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| TT | 40 | Grinding Machines | 7 | 2 | 15 | 272 |
| TT | 41 | Heat Treating | 4 | 1 | 8 | 144 |
| PHY | 22 | Introduction to Metallurgy | 4 | 4 | 0 | 64 |
| | | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | | 18 | 10 | 23 | 528 |

***Electives (General Studies):** ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# MACHINIST GENERAL (MG)

*Certificate / Two Years*

The Machinist General Program offers you training on machine tools that are common to most shops and emphasizes skill with machines as well as general education subjects. Classroom analysis of various jobs and machine operations will increase your capabilities as a machinist. Mathematics, science, and communications skills are included to help you meet the demands of modern technical developments and to prepare you for career advancement.

**Types of Jobs:** Machinist, machine repair mechanic, setup man for production line work, skilled tool-room mechanic.

**Job Opportunities:** Never have the opportunities been so great for men trained in the mechanical field; jobs are available nationally with excellent starting salaries and unlimited chances for advancement.

FIRST SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| MG 11 | Basic Machine Shop | 3 | 23 | 416 |
| ENG 01 | Communications or ENG 11 | 3 | 0 | 48 |
| MAT 10 | General Mathematics or MAT 20 | 3 | 0 | 48 |
| | | 9 | 23 | 512 |

SECOND SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| MG 12 | Basic Machine Shop | 3 | 23 | 416 |
| ENG 02 | Communications or ENG 12 | 3 | 0 | 48 |
| MAT 20 | Algebra or *MAT Elective | 3 | 0 | 48 |
| | | 9 | 23 | 512 |

THIRD SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| ED 01 | Mechanical Drawing | 1 | 3 | 64 |
| MG 13 | Advanced Machine Shop | 3 | 23 | 416 |
| | **Electives (General Studies) | 3 | 0 | 48 |
| | | 7 | 26 | 528 |

FOURTH SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| MG 14 | Advanced Machine Shop | 3 | 23 | 416 |
| ECO 02 | Economics or ECO 11 | 3 | 0 | 48 |
| PHY 20 | Physical Science | 3 | 0 | 48 |
| | | 9 | 23 | 512 |

*Electives: MAT 03 Basic Geometry; MAT 13 Intermediate Algebra; MAT 21 Trigonometry.

**Electives (General Studies): MAT 11 Basic Algebra; BM 47 Small Business Management, English 14 Speech.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics; one year of science.

# COURSE DESCRIPTIONS / *machine shop department*

BM 47 SMALL BUSINESS MANAGEMENT
For course description, see Business Administration Department, page 105.

CS 01 INTRODUCTION TO DATA PROCESSING
For course description, see Computer Science Department, page 111.

ECO 02 ECONOMICS
For course description, see Economics Department, page 128.

ECO 11 ECONOMICS
For course description, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING
For course description, see Drafting Department, page 123.

ENG 01 COMMUNICATIONS
For course description, see English and Speech Department, page 42.

ENG 02 COMMUNICATIONS
For course description, see English and Speech Department, page 42.

ENG 11 LANGUAGE AND COMPOSITION
For course description, see English and Speech Department, page 42.

ENG 12 LANGUAGE AND COMPOSITION
For course description, see English and Speech Department, page 42.

ENG 14 SPEECH
For course description, see English and Speech Department, page 42.

MAT 03 BASIC GEOMETRY
For course description, see Mathematics Department, page 181.

MAT 10 GENERAL MATHEMATICS
For course description, see Mathematics Department, page 181.

MAT 13 INTERMEDIATE ALGEBRA
For course description, see Mathematics Department, page 181.

MAT 20 ALGEBRA
For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY
For course description, see Mathematics Department, page 181.

MG 11 BASIC MACHINE SHOP 416 Hrs.
Elementary bench work; use of hand tools; operation and care of drill press, engine lathe, milling machine, shaper; blueprint reading.

MG 12 BASIC MACHINE SHOP 416 Hrs.
Care and sequence of operation of turret lathe and automatic screw machines; inspection practices; use of precision measuring equipment; advanced blueprint reading; freehand sketching.

MG 13 ADVANCED MACHINE SHOP 416 Hrs.
Advanced training on drill press, jig borer, engine lathe, milling machines and shaper; phase will cover gear cutting, precision boring and die work.

MG 14 ADVANCED MACHINE SHOP 416 Hrs.
Use of grinding machines for cylindrical, internal surfaces; tool and cutter and thread grinding; various phases of heat treating: normalizing, carburizing; hardening and tempering various types of steel.

PHY 20 PHYSICAL SCIENCE
For course description, see Physics Department, page 192.

PHY 21 PHYSICS – MECHANICS
For course description, see Physics Department, page 192.

PHY 22 INTRODUCTION TO METALLURGY
For course description, see Physics Department, page 192.

TT 01 BASIC MACHINE SHOP 2 Cr. - 96 Hrs.
Elementary machine operation: bench, drill press, shaper, engine lathe, milling machines.

TT 02 BASIC MACHINE SHOP 2 Cr. - 96 Hrs.
Theory, setup and operation of turret lathes and automatic screw machines; introduction to quality control; use of precision instrument.

TT 03 BASIC MACHINE SHOP 2 Cr. - 96 Hrs.
Theory and practice of grinding machines and wheels; cylindrical, internal and surface grinding; introduction to heat treating.

TT 10 BENCH/DRILL PRESS 2 Cr. - 64 Hrs.
Use of hand tools to produce layouts and objects by hand; simple filing, sawing, assembling; types of drill presses; drill sharpening; drilling to a layout; drill jigs.

TT 11 ENGINE LATHE 4 Cr. - 128 Hrs.
Theory and tool bit grinding; turning; facing; boring; thread cutting.

TT 12 MILLING MACHINE 4 Cr. - 128 Hrs.
Practice in end, slab, and straddle milling; all types of straight and plain milling.

TT 13 SHAPER 1 Cr. - 48 Hrs.
Producing parallel and square surfaces; shaping rectangular objects.

TT 20 TURRET LATHE/AUTO. SCREW MACH. 4 Cr. - 128 Hrs.
Theory, setup and operation of machines; sequence of operations and tooling; cam development.

TT 21 QUALITY CONTROL/BLUEPRINT READING 4 Cr. - 128 Hrs.
Use of precision instruments; reading mechanical drawings; controlling quality of work by sampling method.

TT 30 BENCH/JIG BORER 2 Cr. - 96 Hrs.
Theory and practice in advanced precision filing; fitting, lapping, and assembling of precision parts required on dies, jigs and fixtures; boring holes to very close dimensions and locations, using micrometer measuring instruments on machines.

TT 31 ENGINE LATHE 4 Cr. - 128 Hrs.
Theory and practice in advanced turning and face plate work; thread cutting of all types; taper work.

TT 32 MILLING MACHINE 4 Cr. - 128 Hrs.
Theory and practice in producing spur, helical and bevel gears; indexing, spiral and cam milling; milling punches and dies.

TT 40 GRINDING MACHINES 7 Cr. - 272 Hrs.
Theory and practice in cylindrical, internal, surface, tool and cutter grinding; thread grinding of studs, taps; special threads.

TT 41 HEAT TREATING 4 Cr. - 144 Hrs.
Theory and practice in normalizing, carburizing, hardening, and tempering of various types of steel; heat treatment of metals.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

ENGLISH 201 OR 202 – HISTORY OF ENGLISH LITERATURE
For course description, see English and Speech courses, page 42.

ENGLISH 211 – FUNDAMENTALS OF SPEECH
For course description, see English and Speech courses, page 42.

GOVERNMENT 201 – AMERICAN GOVERNMENT – NATIONAL
For course description, see Government courses, page 45.

GOVERNMENT 202 – STATE AND LOCAL GOVERNMENT
For course description, see Government courses, page 45.

HISTORY 201 – HISTORY OF THE UNITED STATES
For course description, see History courses, page 46.

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY
For course description, see Psychology courses, page 51.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY
For course description, see Sociology courses, page 51.

SPANISH 101 OR 102 – BEGINNING SPANISH
For course descriptions, see Spanish courses, page 52.

# COURSE DESCRIPTIONS / *mathematics department*

*ROGER E. DAVIS, Acting Department Chairman*

MAT 03 BASIC GEOMETRY 48 Hrs.

Fundamental concepts of lines, angles, triangles, circles; basic geometric relations; general mensuration; geometric constructions; and other selected topics.
*Prerequisite: One year of high school algebra or MAT 11.*

MAT 10 GENERAL MATHEMATICS 48 Hrs.

Arithmetical operations with whole numbers, common and decimal fractions, basic principles of measurement, percentage, averages, signed numbers, and other selected topics.

MAT 11 BASIC ALGEBRA 3 Cr. - 48 Hrs.

Fundamental concepts of arithmetic and algebra; functions and graphs; special products and factoring; fractions, roots and exponents; systems of linear equations; introduction to statistics; other selected topics.

MAT 13 INTERMEDIATE ALGEBRA 4 Cr. - 80 Hrs.

Fundamentals of algebra; functions and graphs; linear equations; quadratic equations; ratio, variation and proportion; binomial theorem; exponents and radicals; numerical trigonometry; determinants; and other selected topics.
*Prerequisites: MAT 11 and MAT 03, or two units of high school mathematics including algebra and geometry or equivalent.*

MAT 20 ALGEBRA 48 Hrs.

Basic concepts of algebra: symbols, equations, ratio and proportion, exponents, radicals, formulas, concepts of right triangle, trigonometry and other selected topics.
*Prerequisite: MAT 10 or advanced placement examination in arithmetic.*

MAT 21 TRIGONOMETRY 4 Cr. - 80 Hrs.

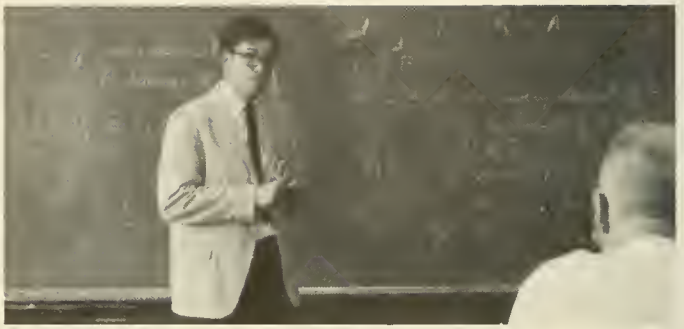
Progressions, right triangle and oblique triangle trigonometry, trigonometric applications, vectors, trigonometric formulas, identities and equations, graphs of the trigonometric functions, complex numbers and the J-operation, and slide rule.
*Prerequisites: MAT 13 and either MAT 03 or high school geometry, or equivalent.*

MAT 31 CALCULUS I 3 Cr. - 48 Hrs.

Fundamentals of analytic geometry, conics, limits, derivatives of algebraic and transcendental functions, applications of the derivative, the indefinite integral and applications, and integral and applications, and integration.
*Prerequisite: MAT 21 or equivalent.*

MAT 41 CALCULUS II 3 Cr. - 48 Hrs.

Methods of integration, introduction to partial derivatives and double integrals, polar coordinates, first-order differential equations, and other selected topics.
*Prerequisite: MAT 31 or equivalent.*



# OFFICE MACHINE REPAIR DEPARTMENT / Career Programs

*GEORGE W. GESLER, Chairman*

Associate Degree

OM Office Machine Technology

Certificate

OR Office Machine Repairman

# OFFICE MACHINE TECHNOLOGY (OM)

*Associate Degree / Two Years*

This program will prepare you as an office machine technician. In order to equip you to meet the challenges of technological advances, emphasis will be placed on mechanical theories, principles, analyses, and testing procedures.

**Types of Jobs:** Engineering assistant, manufacturers' service representative, shop foreman in independently owned agencies, technical assistant, and office equipment salesman.

**Job Opportunities:** Unlimited with excellent salary potential and opportunities for further industry-financed education.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| BS 09 | *Typewriting | 1 | 1 | 2 | 48 |
| OM 11 | Standard Typewriters | 3 | 1 | 6 | 112 |
| OM 12 | Mechanical Analysis I | 4 | 1 | 9 | 160 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 15 | 10 | 18 | 448 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| OM 21 | Disassembly and Reassembly | 5 | 1 | 12 | 208 |
| OM 22 | Electric Typewriters | 2 | 0 | 6 | 96 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | 17 | 11 | 19 | 480 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| OM 31 | Adding Machines | 4 | 1 | 9 | 160 |
| OM 32 | Mechanical Analysis II | 3 | 1 | 6 | 112 |
| OM 33 | Motor Circuits | 1 | 0 | 3 | 48 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | **Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 15 | 9 | 18 | 432 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CS 01 | Introduction to Data Processing | 3 | 3 | 1 | 64 |
| OM 41 | Duplicating Machines | 2 | 0 | 6 | 96 |
| OM 42 | Introduction to Calculators | 3 | 2 | 3 | 80 |
| OM 43 | Office Machine Business Management | 2 | 2 | 0 | 32 |
| OM 44 | Mechanical Analysis III | 2 | 0 | 6 | 96 |
| OM 45 | Introduction to Electrostatic Copying Machines | 2 | 1 | 3 | 64 |
| PHY 31 | Physics-Electricity and Magnetism | 4 | 4 | 0 | 64 |
| | | 18 | 12 | 19 | 496 |

*Upon evidence of typing proficiency, this requirement (BS 09) may be waived by Department Chairman.

**Electives (General Studies): ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government, History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry, one year of science.

# OFFICE MACHINE REPAIRMAN (OR)

*Certificate / Two Years*

This program will train you to perform periodic inspections and to make repairs on different types of office equipment. Related courses such as mathematics, typing, and economics will give you a well-rounded background for advancements in this field. (If you have a physical handicap, you may find this field to be a solution to your vocational need.)

**Types of Jobs:** Typewriter, adding machine, duplicator serviceman; manufacturers' service representative; shop foreman in distributor outlet; branch service manager for company owned shop; self-employment.

**Job Opportunities:** There is an ever increasing demand for personnel to service and repair all types of office equipment; salary rating good to excellent depending on complexity of equipment.

FIRST SEMESTER

| Course | | | Hours Per Week Lect. | Hours Per Week Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| 8S 09 | *Typewriting | | 1 | 2 | 48 |
| OR 10 | Office Machine Repair I | | 0 | 25 | 400 |
| ENG 01 | Communications or ENG 11 | | 3 | 0 | 48 |
| | | | 4 | 27 | 496 |

SECOND SEMESTER

| Course | | | Hours Per Week Lect. | Hours Per Week Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| OR 20 | Office Machine Repair II | | 0 | 25 | 400 |
| ENG 02 | Communications or ENG 12 | | 3 | 0 | 48 |
| MAT 10 | General Mathematics or MAT 20 | | 3 | 0 | 48 |
| | | | 6 | 25 | 496 |

THIRD SEMESTER

| Course | | | Hours Per Week Lect. | Hours Per Week Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| OR 30 | Office Machine Repair III | | 0 | 25 | 400 |
| MAT 20 | Algebra or **MAT Elective | | 3 | 0 | 48 |
| | | | 3 | 25 | 448 |

FOURTH SEMESTER

| Course | | | Hours Per Week Lect. | Hours Per Week Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| OR 40 | Office Machine Repair IV | | 0 | 25 | 400 |
| ECO 02 | Economics or ECO 11 | | 3 | 0 | 48 |
| PHY 20 | Physical Science or PHY 21 | | 3/4 | 0 | 48/64 |
| | | | 6/7 | 25 | 496/512 |

*Upon evidence of typing proficiency, this requirement (8S 09) may be waived by Department Chairman.

**Electives: MAT 03 Basic Geometry; MAT 13 Intermediate Algebra; MAT 21 Trigonometry.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics; one year of science.

# COURSE DESCRIPTIONS /*office machine repair department*

BS 09 TYPEWRITING

For course description, see Business Administration Department, page 105.

CS 01 INTRODUCTION TO DATA PROCESSING

For course description, see Computer Science Department, page 111.

ECO 02 ECONOMICS

For course description, see Economics Department, page 128.

ECO 11 ECONOMICS

For course description, see Economics Department, page 128.

ENG 01 COMMUNICATIONS

For course description, see English and Speech courses, page 42.

ENG 02 COMMUNICATIONS

For course description, see English and Speech courses, page 42.

ENG 11 LANGUAGE AND COMPOSITION

For course description, see English and Speech courses, page 42.

ENG 12 LANGUAGE AND COMPOSITION

For course description, see English and Speech courses, page 42.

ENG 14 SPEECH

For course description, see English and Speech courses, page 42.

MAT 03 BASIC GEOMETRY

For course description, see Mathematics Department, page 181.

MAT 10 GENERAL MATHEMATICS

For course description, see Mathematics Department, page 181.

MAT 13 INTERMEDIATE ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 20 ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY

For course description, see Mathematics Department, page 181.

OM 11 STANDARD TYPEWRITERS 3 Cr. - 112 Hrs.

Study of component parts of standard typewriters; testing of operational functions; study of ribbons, machine models, rubber parts, and cleaning methods.

OM 12 MECHANICAL ANALYSIS I 4 Cr. - 160 Hrs.

Deductive approach to problem solving procedures: analysis of the backspacer, margins, tabulator, escapement, ribbon feed and reverse, bichrome, shift, and paper feed sections.

OM 21 DISASSEMBLY AND REASSEMBLY 5 Cr. - 208 Hrs.

Disassembly and reassembly to study machine structure, relationships of sections, sequence of component parts.

OM 22 ELECTRIC TYPEWRITERS 2 Cr. - 96 Hrs.

Electric typewriters introduced to familiarize student with drive mechanism, power roll, type action, and controlled operation of machines.

OM 31 ADDING MACHINES 4 Cr. - 160 Hrs.

History, business use, and component sections of adding machines; operation of full keyboard and ten-key adding machine; training to perform periodic inspection service for preventive maintenance.

OM 32 MECHANICAL ANALYSIS II 3 Cr. - 112 Hrs.

Correction of prominent mechanical problems; introduction to credit-balance adding machines.

OM 33 MOTOR CIRCUITS 1 Cr. - 48 Hrs.

Theory and practical work on electrical circuits and power transmission on office machines.

OM 41 DUPLICATING MACHINES 2 Cr. - 96 Hrs.

Theory and operation of duplicating machines: stencil, spirit; lettering and layout; use of scope; machine set-up; color changing.

OM 42 INTRODUCTION TO CALCULATORS 3 Cr. - 80 Hrs.

Introductory study of semi-automatic and automatic rotary calculators.

OM 43 OFFICE MACHINE BUSINESS MANAGEMENT 2 Cr. - 32 Hrs.

Presentation of business management program for office machine technicians.

OM 44 MECHANICAL ANALYSIS III 2 Cr. - 96 Hrs.

Designed for students choosing to work for duplicator machine companies; detailed adjustment and reconditioning procedures.

OM 45 INTRODUCTION TO ELECTROSTATIC COPYING MACHINES 2 Cr. - 64 Hrs.

Designed for students considering employment with manufacturers of electrostatic copying machines; fundamentals, service procedures introduced.

OR 10 OFFICE MACHINE REPAIR I 400 Hrs.

Typewriter operation; functional testing; trade history; machine development, rubber parts; ribbons; machine models; training to perform periodic preventive maintenance inspections.

OR 20 OFFICE MACHINE REPAIR II 400 Hrs.

Analysis of typewriter sections and understanding of components, assembly and reassembly of machines to develop manipulative skills; trade procedures and job standards; drive, power roll, type action, and controlled operations of electric typewriters.

OR 30 OFFICE MACHINE REPAIR III 400 Hrs.

History, business use, and sectional components of adding machines; operation and testing of ten-key and full keyboard adding machines; servicing, adjusting, and repair of mechanical problems.

OR 40 OFFICE MACHINE REPAIR IV 400 Hrs.

Stencil duplicating arts; duplicator operation and service; office machine business management program.

PHY 20 PHYSICAL SCIENCE

For course description, see Physics Department, page 192.

PHY 21 PHYSICS – MECHANICS

For course description, see Physics Department, page 192.

PHY 31 PHYSICS – ELECTRICITY AND MAGNETISM

For course description, see Physics Department, page 192.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

ENGLISH 201 OR 202 – HISTORY OF ENGLISH LITERATURE

For course description, see English and Speech courses, page 42.

ENGLISH 211 – FUNDAMENTALS OF SPEECH

For course description, see English and Speech courses, page 42.

GOVERNMENT 201 – AMERICAN GOVERNMENT – NATIONAL

For course description, see Government courses, page 45.

GOVERNMENT 202 – STATE AND LOCAL GOVERNMENT

For course description, see Government courses, page 45.

HISTORY 201 – HISTORY OF THE UNITED STATES

For course description, see History courses, page 46.

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY

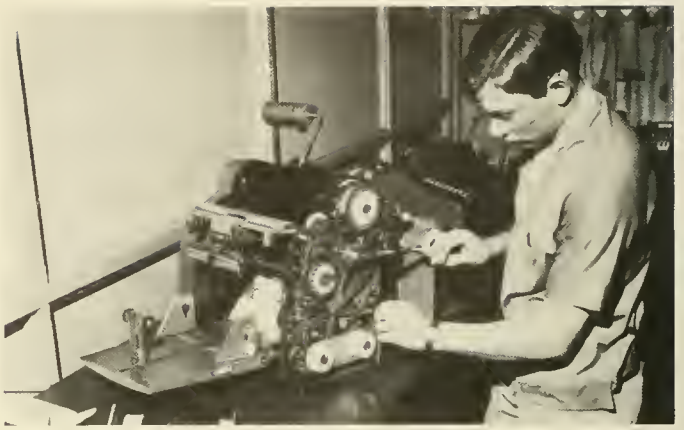
For course description, see Psychology courses, page 51.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY

For course description, see Sociology courses, page 51.

SPANISH 101 OR 102 – BEGINNING SPANISH

For course description, see Spanish courses, page 52.



# PATTERNMAKING DEPARTMENT / Career Program

*WILLIAM G. HITCHENS, Chairman*

Certificate

WP Wood-Patternmaking

# WOOD-PATTERNMAKING (WP)

## Certificate / Two Years

The Wood-Patternmaking Program offers you training on all types of woodworking equipment commonly used in patternshops. In addition, you will receive training in the care and use of hand tools required of the patternmaker. As a patternmaker, you will become skilled in preparing, shaping, or building wood and other adaptable materials into models to be used in preparing molds for casting any of the required shapes in modern industry.

**Types of Jobs:** Patternmaker, cabinet maker, model maker, woodworking machine operator, production woodworker.

**Job Opportunities:** Unlimited with good starting wages.

FIRST SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| ED 01 | Mechanical Drawing | 1 | 3 | 64 |
| WP 10 | Wood-Patternmaking | 1 | 21 | 352 |
| ENG 01 | Communications or ENG 11 | 3 | 0 | 48 |
| MAT 10 | General Mathematics or MAT 20 | 3 | 0 | 48 |
| | | 8 | 24 | 512 |

SECOND SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| WP 20 | Wood-Patternmaking | 1 | 25 | 416 |
| ENG 02 | Communications or ENG 12 | 3 | 0 | 48 |
| MAT 20 | Algebra or *MAT Elective | 3 | 0 | 48 |
| | | 7 | 25 | 512 |

THIRD SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| WP 30 | Wood-Patternmaking | 1 | 25 | 416 |
| ECO 02 | Economics or ECO 11 | 3 | 0 | 48 |
| | | 4 | 25 | 464 |

FOURTH SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| WP 40 | Wood-Patternmaking | 1 | 25 | 416 |
| PHY 20 | Physical Science or PHY 21 | 3/4 | 0 | 48/64 |
| | **Elective | 3 | 0 | 48 |
| | | 7/8 | 25 | 512/528 |

*Electives: MAT 03 Basic Geometry; MAT 13 Intermediate Algebra; MAT 21 Trigonometry.

**Electives: ED 12 Industrial Processes or TW 10 Design of Wood.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics, one year of science.

# COURSE DESCRIPTIONS /*patternmaking department*

ECO 02
AND 11 ECONOMICS
For course descriptions, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING
For course description, see Drafting Department, page 123.

ED 12 INDUSTRIAL PROCESSES
For course description, see Drafting Department, page 124.

ENG 01
AND 02 COMMUNICATIONS
For course descriptions, see English and Speech Department, page 42.

ENG 11
AND 12 LANGUAGE AND COMPOSITION
For course descriptions, see English and Speech Department, page 42.

MAT 03 BASIC GEOMETRY
For course description, see Mathematics Department, page 181.

MAT 10 GENERAL MATHEMATICS
For course description, see Mathematics Department, page 181.

MAT 13 INTERMEDIATE ALGEBRA
For course description, see Mathematics Department, page 181.

MAT 20 ALGEBRA
For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY
For course description, see Mathematics Department, page 181.

PHY 20 PHYSICAL SCIENCE
For course description, see Physics Department, page 192.

PHY 21 PHYSICS – MECHANICS
For course description, see Physics Department, page 192.

TW 10 DESIGN OF WOOD
For course description, see Building Construction Department, page 98.

WP 10 WOOD – PATTERNMAKING 352 Hrs.
Designed to give basic knowledge of making patterns, using wood working machines; methods of gluing lumber to produce strength.

WP 20 WOOD – PATTERNMAKING 416 Hrs.
Types of construction of patterns and core boxes used in molding practices.

WP 30 WOOD – PATTERNMAKING 416 Hrs.
Advanced practice in wood patternmaking: jigs and fixtures, special types of patterns: loose pieces, interchangeable pieces.

WP 40 WOOD – PATTERNMAKING 416 Hrs.
Knowledge of production type patterns, master patterns, match plate work; checking of patterns and core boxes.

# COURSE DESCRIPTIONS / *physics department*

*RAMON PALMER, Department Chairman*

PHY 20 PHYSICAL SCIENCE 48 Hrs.

Designed for certificate programs; lectures and demonstrations; problem solving; reading assignments.

PHY 21 PHYSICS – MECHANICS 4 Cr. - 64 Hrs.

Lecture, demonstration, problem-solving course in elementary mechanics: basic concepts of scientific method; the metric system; vectors, translatory motion; rotary motion, work, power, energy; physical properties of liquids, solids, gases. *Prerequisites: MAT 21 or equivalent and one year high school science.*

PHY 22 INTRODUCTION TO METALLURGY 4 Cr. - 64 Hrs.

Introduction to science of physical metallurgy; chemical composition, crystallization, effects of mechanical treatment: drawing, rolling, shaping; thermal or heat treatment.
*Prerequisite: PHY 21.*

PHY 31 PHYSICS – ELECTRICITY AND MAGNETISM 4 Cr. - 64 Hrs.

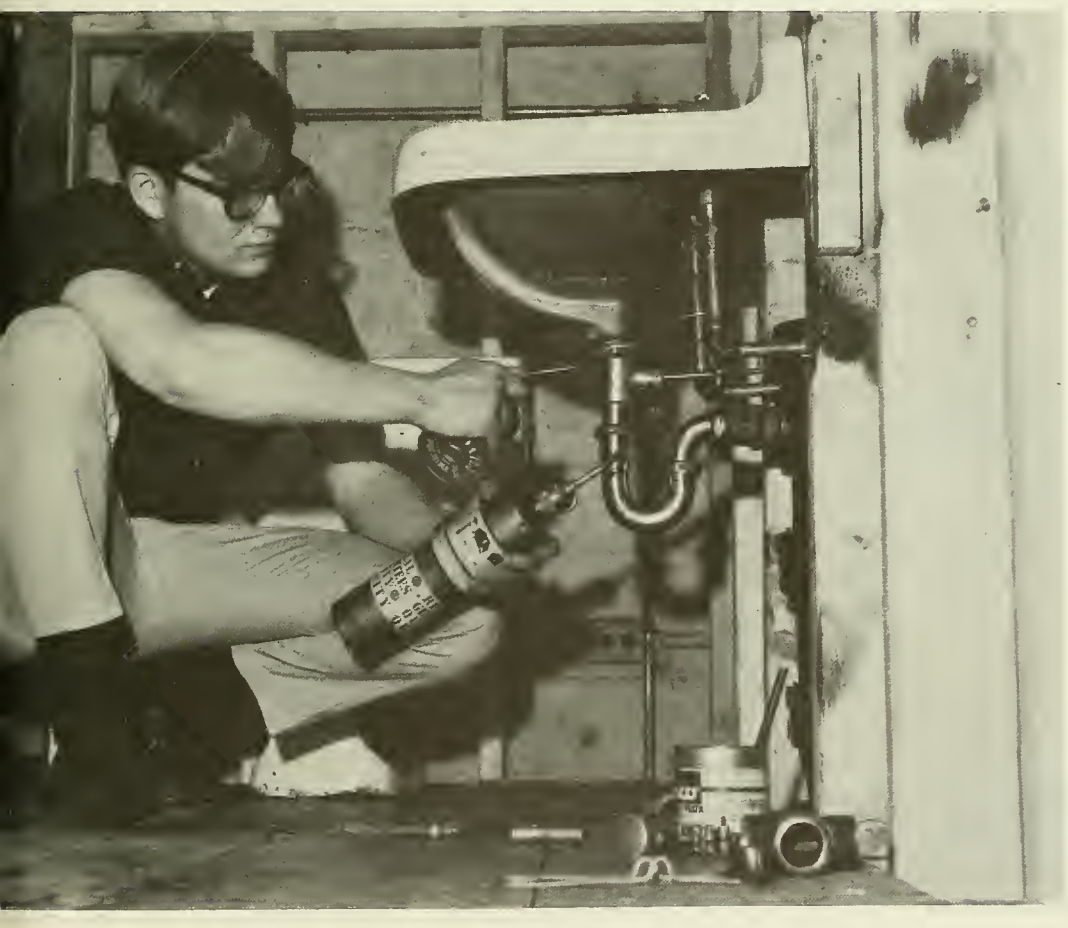
Fundamental concepts of electrostatics, electrolysis; AC and DC circuits, magnetism; electromagnetic induction; basic principles of electricity.
*Prerequisite: PHY 21.*

PHY 32 PHYSICS – HEAT AND LIGHT 3 Cr. - 48 Hrs.

Basic principles of heat and its measurements: thermometry, calorimetry, expansion of liquids, solids, and gases, transfer of heat; study of light including refraction, illumination, optics and color.
*Prerequisite: PHY 21.*

# PLUMBING DEPARTMENT / Career Programs

*FRANK A. McGINN, Chairman*



Associate Degree

PT Plumbing and Heating Technology

Certificate

PL Plumbing and Heating

# PLUMBING AND HEATING TECHNOLOGY (PT)

*Associate Degree / Two Years*

The Plumbing and Heating Technology Program will qualify you as a plumbing and heating technician who will understand current trade problems and who will be prepared to adapt to future developments in the technology. The program specifics cover all phases of the plumbing and heating field to insure mastery of vocational skills and include the academic education necessary for advancement and personal growth.

Types of Jobs: Plumbing and heating technician, estimator; design layout field; construction technician consultant; sales representative.

Job Opportunities: Good with excellent starting salaries and opportunities for further industry-financed education.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| PT 11 | Use of Hand and Power Tools | 5 | 2 | 9 | 176 |
| PT 13 | Building Maintenance | 2 | 1 | 3 | 64 |
| PT 15 | Steam Heating (Basic) | 3 | 1 | 6 | 112 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 17 | 11 | 19 | 480 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| PT 21 | Venting and Drainage (Basic) | 3 | 1 | 6 | 112 |
| PT 23 | Building Maintenance | 2 | 1 | 3 | 64 |
| PT 24 | Lead Working (Basic) | 3 | 1 | 6 | 112 |
| PT 25 | Hot Water Heating | 2 | 1 | 3 | 64 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | 17 | 11 | 19 | 480 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| PT 30 | Water Distribution | 3 | 1 | 6 | 112 |
| PT 32 | Blueprint Reading and Estimating | 3 | 3 | 0 | 48 |
| PT 33 | Building Maintenance (Advanced) | 1 | 1 | 3 | 64 |
| PT 35 | Steam and Hot Water Heating (Advanced) | 3 | 1 | 8 | 144 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | *Elective or **Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 17 | 13 | 17 | 480 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| PT 41 | Venting and Drainage (Advanced) | 2 | 1 | 6 | 112 |
| PT 44 | Lead Wiping | 3 | 1 | 6 | 112 |
| WE 01 | Acetylene Welding | 2 | 0 | 5 | 80 |
| WE 02 | Electric Welding | 2 | 0 | 5 | 80 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| PHY 32 | Physics-Heat and Light | 3 | 3 | 0 | 48 |
| | | 15 | 8 | 22 | 480 |

*Electives: PHY 22 Introduction to Metallurgy; MAT 31 Calculus I. (For students entering with advanced placement.)

**Electives (General Studies): ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# PLUMBING AND HEATING (PL)

## Certificate / Two Years

As a student in the Plumbing Program, you will be taught the basic theories of plumbing and heating, soil waste and vent layout, household and industrial maintenance, sewage systems, and the use of hand and power tools. The fundamentals of communications and mathematics will also be covered, and you will be trained in all types of plumbing and heating repair work to insure job choice and top pay when you graduate.

**Types of Jobs:** Plumbing and heating installation, industrial maintenance, public utilities service, machine work, and ship building industries.

**Job Opportunities:** Excellent starting wages and opportunities for rapid advancements.

FIRST SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| PL 11 | Plumbing and Heating | 5 | 20 | 400 |
| ENG 01 | Communications or ENG 11 | 3 | 0 | 48 |
| MAT 10 | General Mathematics or MAT 20 | 3 | 0 | 48 |
| | | 11 | 20 | 496 |

SECOND SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| PL 12 | Plumbing and Heating | 5 | 20 | 400 |
| ENG 02 | Communications or ENG 12 | 3 | 0 | 48 |
| MAT 20 | Algebra or *MAT Elective | 3 | 0 | 48 |
| | | 11 | 20 | 496 |

THIRD SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| PL 13 | Plumbing and Heating | 5 | 20 | 400 |
| ECO 02 | Economics or ECO 11 | 3 | 0 | 48 |
| | **Electives (General Studies) | 3 | 0 | 48 |
| | | 11 | 20 | 496 |

FOURTH SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| PL 14 | Plumbing and Heating | 5 | 16.25 | 340 |
| WE 01 | Acetylene Welding | 0 | 5 | 80 |
| WE 02 | Electric Welding | 0 | 5 | 80 |
| | | 5 | 26.25 | 500 |

*Electives: MAT 03 Basic Geometry; MAT 13 Intermediate Algebra; MAT 21 Trigonometry.

**Electives (General Studies): MAT 11 Basic Algebra; BM 47 Small Business Management; PHY 20 Physical Science.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics; one year of science.

# COURSE DESCRIPTIONS / *plumbing department*

BM 47 SMALL BUSINESS MANAGEMENT

For course description, see Business Administration Department, page 105.

CS 01 INTRODUCTION TO DATA PROCESSING

For course description, see Computer Science Department, page 111.

ECO 02 ECONOMICS

For course description, see Economics Department, page 128.

ECO 11 ECONOMICS

For course description, see Economics Department, page 128.

ENG 01 COMMUNICATIONS

For course description, see English and Speech courses, page 42.

ENG 02 COMMUNICATIONS

For course description, see English and Speech courses, page 42.

ENG 11 LANGUAGE AND COMPOSITION

For course description, see English and Speech courses, page 42.

ENG 12 LANGUAGE AND COMPOSITION

For course description, see English and Speech courses, page 42.

ENG 14 SPEECH

For course description, see English and Speech courses, page 42.

MAT 03 BASIC GEOMETRY

For course description, see Mathematics Department, page 181.

MAT 10 GENERAL MATHEMATICS

For course description, see Mathematics Department, page 181.

MAT 11 BASIC ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 13 INTERMEDIATE ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 20 ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY

For course description, see Mathematics Department, page 181.

MAT 31 CALCULUS I

For course description, see Mathematics Department, page 182.

PHY 20 PHYSICAL SCIENCE

For course description, see Physics Department, page 192.

PHY 21 PHYSICS – MECHANICS

For course description, see Physics Department, page 192.

PHY 22 INTRODUCTION TO METALLURGY

For course description, see Physics Department, page 192.

PHY 32 PHYSICS – HEAT AND LIGHT

For course description, see Physics Department, page 192.

PL 11 PLUMBING AND HEATING 400 Hrs.

Introduction to plumbing and heating trade; use of hand and power tools; safety procedures; basic lead working; venting and drainage; septic tanks and water distribution.

PL 12 PLUMBING AND HEATING 400 Hrs.

Materials and methods for venting bathrooms; blueprint reading and estimating; use of lead working tools; bending lead pipe; preparing lead pipe for wiping; building maintenance. Individual projects and live work.

PL 13 PLUMBING AND HEATING 400 Hrs.

Lead working; steam and hot water heating systems; theory of circulation in hot and cold water distribution to all types of fixtures. Individual projects and live work.

PL 14 PLUMBING AND HEATING 340 Hrs.

Advanced venting and drainage of all types of plumbing systems; testing of plumbing; preparing and wiping lead joints; building maintenance. Live work.

PT 11 USE OF HAND AND POWER TOOLS 5 Cr. - 176 Hrs.

Theory, tools, and techniques of pipe fitting; related drafting instructions; installation of septic tanks and cesspools.

PT 13 BUILDING MAINTENANCE 2 Cr. - 64 Hrs.

Theory, installation, care, and repair of valves, piping, vents, pumps, and fixtures.

PT 15 STEAM HEATING (BASIC) 3 Cr. - 112 Hrs.

Theory, types, application, and repair of steam and hot water heating systems and their components.

PT 21 VENTING AND DRAINAGE (BASIC) 3 Cr. - 112 Hrs.

Theory, materials, and methods for venting bathrooms and draining plumbing systems.

PT 23 BUILDING MAINTENANCE 2 Cr. - 64 Hrs.

Continuation of PT 13; opening stopped waste and soil lines.

PT 24 LEAD WORKING (BASIC) 3 Cr. - 112 Hrs.

Theory and practice in types of corners; patterns for cutting and preparing sheet lead.

PT 25 HOT WATER HEATING 2 Cr. - 64 Hrs.

Continuation of PT 15.

PT 30 WATER DISTRIBUTION 3 Cr. - 112 Hrs.

Theory and practice in installation of hot and cold water systems from mains and heaters to fixtures.

PT 32 BLUEPRINT READING AND ESTIMATING 3 Cr. - 48 Hrs.

Signs and symbols for blueprint reading; use of estimating sheets; labor materials; take-off estimating of materials; isometric drawing; trade terms.

PT 33 BUILDING MAINTENANCE (ADVANCED) 1 Cr. - 64 Hrs.

Continuation of PT 23.

PT 35 STEAM AND HOT WATER HEATING (ADVANCED) 3 Cr. - 144 Hrs.

Continuation of PT 25.

PT 41 VENTING AND DRAINAGE (ADVANCED) 2 Cr. - 112 Hrs.

Continuation of PT 21.

PT 44 LEAD WIPING 3 Cr. - 112 Hrs.

Theory and practice in the preparing and wiping of pipe joints.

WE 01 ACETYLENE WELDING

For course description, see Welding Department, page 208.

WE 02 ELECTRIC WELDING

For course description, see Welding Department, page 208.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

ENGLISH 201 OR 202 — HISTORY OF ENGLISH LITERATURE

For course descriptions, see English and Speech courses, page 42.

ENGLISH 211 — FUNDAMENTALS OF SPEECH

For course description, see English and Speech courses, page 42.

GOVERNMENT 201 — AMERICAN GOVERNMENT-MATIONAL

For course description, see Government courses, page 45.

GOVERNMENT 202 — STATE AND LOCAL GOVERNMENT

For course description, see Government courses, page 45.

HISTORY 201 — HISTORY OF THE UNITED STATES

For course description, see History courses, page 46.

PSYCHOLOGY 101 — GENERAL PSYCHOLOGY

For course description, see Psychology courses, page 51.

SOCIOLOGY 101 — INTRODUCTION OF SOCIOLOGY

For course description, see Sociology courses, page 51.

SPANISH 101 OR 102 — BEGINNING SPANISH

For course descriptions, see Spanish courses, page 52.

# SHEET METAL DEPARTMENT / Career Program

*GEORGE C. KRAUSE, Chairman*

Certificate

SM Sheet Metal

# SHEET METAL (SM)

*Certificate / Two Years*

The Sheet Metal Program places stress upon the principles and practices of modern metal working equipment. Fundamentals of the trade coupled with some general education background courses will provide you opportunity for advancements.

**Types of Jobs:** Employment in various phases of sheet metal work including the service trades, heating, ventilation, air-conditioning, manufacturing, construction, ship building; or self-employment.

**Job Opportunities:** Excellent with good starting wages.

FIRST SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| SM 10 | Basic Sheet Metal (Hand/Machine) | 5 | 20 | 400 |
| ENG 01 | Communications or ENG 11 | 3 | 0 | 48 |
| MAT 10 | General Mathematics or MAT 20 | 3 | 0 | 48 |
| | | 11 | 20 | 496 |

SECOND SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| SM 20 | Intermediate Processes | 5 | 20 | 400 |
| ENG 02 | Communications or ENG 12 | 3 | 0 | 48 |
| MAT 20 | Algebra or MAT *Elective | 3 | 0 | 48 |
| | | 11 | 20 | 496 |

THIRD SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| SM 30 | Basic Commercial Sheet Metal | 5 | 20 | 400 |
| ECO 02 | Economics or ECO 11 | 3 | 0 | 48 |
| | | 8 | 20 | 448 |

FOURTH SEMESTER

| | Course | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| BM 47 | Small Business Management | 3 | 0 | 48 |
| SM 40 | Commercial Sheet Metal | 5 | 20 | 400 |
| PHY 20 | Physical Science or PHY 21 | 3/4 | 0 | 48/64 |
| | | 11/12 | 20 | 496/512 |

*Electives: MAT 03 Basic Geometry; MAT 13 Intermediate Algebra; MAT 21 Trigonometry.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics; one year of drafting.

# COURSE DESCRIPTIONS / *sheet metal department*

BM 47 SMALL BUSINESS MANAGEMENT
For course description, see Business Administration Department, page 105.

ECO 02 AND 11 ECONOMICS
For course descriptions, see Economics Department, page 128.

ENG 01 AND 02 COMMUNICATIONS
For course descriptions, see English and Speech Department, page 42.

ENG 11 AND 12 LANGUAGE AND COMPOSITION
For course descriptions, see English and Speech Department, page 42.

MAT 03 BASIC ALGEBRA
For course description, see Mathematics Department, page 181.

MAT 10 GENERAL MATHEMATICS
For course description, see Mathematics Department, page 181.

MAT 13 INTERMEDIATE ALGEBRA
For course description, see Mathematics Department, page 181.

MAT 20 ALGEBRA
For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY
For course description, see Mathematics Department, page 181.

PHY 20 PHYSICAL SCIENCE
For course description, see Physics Department, page 192.

PHY 21 PHYSICS – MECHANICS
For course description, see Physics Department, page 192.

SM 10 BASIC SHEET METAL (HAND/MACHINE) 400 Hrs.
Introduction to sheet metal working tools, metals, techniques and safety regulations; instruction in related drafting and mathematics; accuracy in interpreting elementary blueprints; resistance welding.

SM 20 INTERMEDIATE PROCESSES 400 Hrs.
Practical pattern drafting including heating, air-conditioning and ventilation; construction principles and practices; roofing, spouting and flashing; related drafting instruction; live work from planning stage to completion.

SM 30 BASIC COMMERCIAL SHEET METAL 400 Hrs.
Basic welding procedures for light metals; use and care of equipment; fabrication and repair of commercial equipment; ornamental sheet metal work; press working techniques; introduction to more costly metals; spray painting.

SM 40 COMMERCIAL SHEET METAL 400 Hrs.
Introduction, theory and techniques of basic processes in plastics; principles, design, and fabrication of industrial and residential ventilation; precision layout; working to close tolerances; advanced theory on commercial sheet metal and work on power-driven machinery.

# SIGN PAINTING DEPARTMENT / Career Program

*WILLIAM S. BEST, Chairman*

Certificate

SP Sign Painting

# SIGN PAINTING (SP)

Certificate / Two Years

For the growing, important trade of sign painting, this program will give you practical experiences in lettering skills, design, layout, and type finishings of signs and showcards. Materials, equipment, and safety practices used in painting, building, and sign erection will be stressed. You may specialize in one or two specific fields of this vocation.

**Types of Jobs:** Self-employment; work with sign painters, bottlers, outdoor advertisers, department stores, theaters, television stations, and truck fleets.

**Job Opportunities:** Unlimited and fair starting wages with excellent chances for advancement.

FIRST SEMESTER

| Course | | | Hours Per Week Lect. | Hours Per Week Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| SP | 01 | Basic Alphabets | 0 | 25 | 400 |
| ECO | 02 | Economics or ECO 11 | 3 | 0 | 48 |
| ENG | 01 | Communications or ENG 11 | 3 | 0 | 48 |
| | | | 6 | 25 | 496 |

SECOND SEMESTER

| Course | | | Hours Per Week Lect. | Hours Per Week Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| SP | 02 | Letter Strokes and Showcard Layout | 0 | 32 | 512 |
| | | | 0 | 32 | 512 |

THIRD SEMESTER

| Course | | | Hours Per Week Lect. | Hours Per Week Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| SP | 03 | Commercial Showcards | 0 | 28 | 448 |
| | | *Electives SP 05 or SP 06 | 3 | 0 | 48 |
| | | | 3 | 28 | 496 |

FOURTH SEMESTER

| Course | | | Hours Per Week Lect. | Hours Per Week Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| SP | 04 | Commercial Signs | 0 | 25 | 400 |
| ENG | 02 | Communications or ENG 12 | 3 | 0 | 48 |
| | | *Electives SP 06, SP 07 or BM 47 | 3 | 0 | 48 |
| | | | 6 | 25 | 496 |

*Electives: Enrollment in SP 06 and SP 07 depends upon demonstrated competence in SP 01, SP 02, and to some extent SP 03 and SP 04. Instructors will certify students to enroll. BM 47 (Small Business Management) may be elected in lieu of the above.

Recommended high school subjects: Two years of mathematics; one year of science.

# COURSE DESCRIPTIONS / *sign painting department*

BM 47 SMALL BUSINESS MANAGEMENT
For course description, see Business Administration Department, page 105.

ECO 02
AND 11 ECONOMICS
For course descriptions, see Economics Department, page 128.

ENG 01
AND 02 COMMUNICATIONS
For course descriptions, see English and Speech Department, page 42.

ENG 11
AND 12 LANGUAGE AND COMPOSITION
For course descriptions, see English and Speech Department, page 42.

SP 01 BASIC ALPHABETS 400 Hrs.
Use and care of sign materials; fundamentals of alphabets; skill in making elements with brush.

SP 02 LETTER STROKES AND SHOWCARD LAYOUT 512 Hrs.
Continuation of practice in letter strokes; preparation of thumbnail sketches and showcard layout.

SP 03 COMMERCIAL SHOWCARDS 448 Hrs.
Continuation of thumbnail sketches and showcard layout; emphasis on quality with speed.

SP 04 COMMERCIAL SIGNS 400 Hrs.
Brush techniques in laying out and painting commercial signs, trucks, window lettering; masking; using bulletin colors and spray lacquers.

SP 05 GOLD LEAF 48 Hrs.
Preparing surfaces for all types of metallic leaf application; treatment of gold leaf on glass.

SP 06 SILK SCREEN 48 Hrs.
Executing layout problems for knife-cut silk screens; running production with one man processor.

SP 07 BILLBOARD PICTORIALS 48 Hrs.
Enlarging pictorials; mixing paints of different medias; enlargement and painting.

# WELDING DEPARTMENT / Career Programs

*BERNARD WILLIAMS, Chairman*

Associate Degree

WT Welding Technology

Certificate

WE Welding

# WELDING TECHNOLOGY (WT)

## Associate Degree / Two Years

The Welding Technology Program will provide you with the technical background essential in the adaptation of welding theories to production. Theory combined with experience in electric, oxy-acetylene and inert gas welding principles is stressed to provide you occupational proficiency.

**Types of Jobs:** Welding specialist equipment representative, technician, foreman, analyst, inspector, job shop proprietor.

**Job Opportunities:** Unlimited with excellent starting rates and advancement possibilities.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 01 | Mechanical Drawing | 2 | 1 | 3 | 64 |
| WT 11 | Acetylene Welding-Position | 6 | 1 | 15 | 256 |
| WT 13 | Alloy Welding and Brazing | 1 | 1 | 2 | 48 |
| ENG 11 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 16 | 10 | 21 | 496 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 05 | Blueprint Reading | 1 | 0 | 3 | 48 |
| WT 20 | Electric Welding | 8 | 1 | 21 | 352 |
| ENG 12 | Language and Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | 16 | 8 | 25 | 528 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| WT 34 | Electric Welding (Advanced) | 3 | 1 | 6 | 112 |
| WT 35 | Inert Gas Welding (TIG) | 3 | 1 | 6 | 112 |
| WT 43 | Acetylene Welding (Advanced) | 1 | 1 | 2 | 48 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 17 | 13 | 14 | 432 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| WT 44 | Code Welding | 3 | 1 | 6 | 112 |
| WT 45 | Inert Gas Welding (MIG) | 2 | 1 | 5 | 96 |
| WT 47 | Physical Testing of Welds | 1 | 0 | 3 | 48 |
| PHY 22 | Introduction to Metallurgy | 4 | 4 | 0 | 64 |
| PHY 31 | Physics-Electricity and Magnetism | 4 | 4 | 0 | 64 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 17 | 13 | 14 | 432 |

***Electives (General Studies):** ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# WELDING (WE)

*Certificate / Two Years*

Through emphasis placed on theory and manipulative skills, the Welding Certificate Program will prepare you as a competent craftsman. Through stress on developments and techniques in electric, oxy-acetylene and inert gas shielded methods of welding, you will gain recognized proficiency.

**Types of Jobs:** Welder, welder operator, fitter, specialist, foreman, supervisor and inspector.

**Job Opportunities:** Unlimited with good starting rates and advancement potential.

FIRST SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| WE 11 | Acetylene Welding | 1 | 25 | 416 |
| ENG 01 | Communications or ENG 11 | 3 | 0 | 48 |
| MAT 10 | General Mathematics or MAT 20 | 3 | 0 | 48 |
| | | 7 | 25 | 512 |

SECOND SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| ED 05 | Blueprint Reading | 0 | 3 | 48 |
| WE 12 | Electric Welding | 1 | 21 | 352 |
| ENG 02 | Communications or ENG 12 | 3 | 0 | 48 |
| MAT 20 | Algebra or *MAT Elective | 3 | 0 | 48 |
| | | 7 | 24 | 496 |

THIRD SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| WE 13 | Inert Gas Welding | 1 | 25 | 416 |
| | **Elective | 3 | 0 | 48 |
| | | 4 | 25 | 464 |

FOURTH SEMESTER

| Course | | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|
| WE 14 | Welding (Advanced) | 1 | 25 | 416 |
| ECO 02 | Economics or ECO 11 | 3 | 0 | 48 |
| PHY 20 | Physical Science or PHY 21 | 3/4 | 0 | 48/64 |
| | | 7/8 | 25 | 512/528 |

***Electives:** MAT 13 Intermediate Algebra; MAT 21 Trigonometry.

****Electives:** BM 47 Small Business Management; Chemistry 100 - Introduction to Chemistry; MAT 03 Basic Geometry.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Recommended high school subjects: Two years of mathematics; one year of science.

# COURSE DESCRIPTIONS / *welding department*

BM 47 SMALL BUSINESS MANAGEMENT

For course description, see Business Administration Department, page 105.

CS 01 INTRODUCTION TO DATA PROCESSING

For course description, see Computer Science Department, page 111.

ECO 02
AND 11 ECONOMICS

For course descriptions, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING

For course description, see Drafting Department, page 123.

ED 05 BLUEPRINT READING

For course description, see Drafting Department, page 124.

ENG 01
AND 02 COMMUNICATIONS

For course descriptions, see English and Speech courses, page 42.

ENG 11
AND 12 LANGUAGE AND COMPOSITION

For course descriptions, see English and Speech courses, page 42.

ENG 14 SPEECH

For course description, see English and Speech Department, page 42.

IM 34 ACETYLENE WELDING – THEORY AND PRACTICE — 3 Cr. - 112 Hrs.

Basic acetylene welding of the five general types of joints in flat, vertical, horizontal and overhead positions; brazing and freehand cutting; production line techniques.

IM 45 ELECTRIC WELDING – THEORY AND PRACTICE — 3 Cr. - 112 Hrs.

Basic electric welding of general types of joints with different types and sizes of electrodes; electric welding on production line.

MAT 03 BASIC GEOMETRY

For course description, see Mathematics Department, page 181.

MAT 10 GENERAL MATHEMATICS

For course description, see Mathematics Department, page 181.

MAT 13 INTERMEDIATE ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 20 ALGEBRA

For course description, see Mathematics Department, page 181.

MAT 21 TRIGONOMETRY

For course description, see Mathematics Department, page 181.

PHY 20 PHYSICAL SCIENCE

For course description, see Physics Department, page 192.

PHY 21 PHYSICS – MECHANICS

For course description, see Physics Department, page 192.

PHY 22 INTRODUCTION TO METALLURGY

For course description, see Physics Department, page 192.

PHY 31 PHYSICS – ELECTRICITY AND MAGNETISM

For course description, see Physics Department, page 192.

WE 01 ACETYLENE WELDING 2 Cr. - 80 Hrs.

Selected units in basic acetylene welding for plumbing students.

WE 02 ELECTRIC WELDING 2 Cr. - 80 Hrs.

Selected units in basic electric welding for plumbing students.

WE 03 ACETYLENE WELDING 1 Cr. - 48 Hrs.

Basic units of acetylene welding for auto and diesel students.

WE 04 ELECTRIC WELDING 1 Cr. - 48 Hrs.

Basic units of arc welding for auto and diesel students.

WE 11 ACETYLENE WELDING 416 Hrs.

Theory and practice welding of sheet metal and mild steel plate; oxy-acetylene cutting; pipe welding; welding and brazing of ferrous and non-ferrous metals; weld testing; shop safety.

WE 12 ELECTRIC WELDING 352 Hrs.

Principles and applications of basic electric welding using various types of electrodes for welding of steel plate in all positions; pipe welding; cast iron welding; weld testing.

WE 13 INERT GAS WELDING 416 Hrs.

Theories and practices of manual inert gas shield technique (TIG) and short arc, high speed, semi-automatic, metallic arc process (MIG).

WE 14 WELDING (ADVANCED) 416 Hrs.

Practical theory application of weldments of specifications of AWS, API and ASME codes; all position welding of heavy plate and pipe; testing of weld specimens.

WT 11 ACETYLENE WELDING – POSITION 6 Cr. - 256 Hrs.

Theory and practice in elementary acetylene welding; flame characteristics; metal identification; joint preparation; forehand and backhand welding of plate sheet metal and pipe in all positions; inspection; freehand straight line cutting, beveling; machine cutting, safety.

WT 13 ALLOY WELDING AND BRAZING 1 Cr. - 48 Hrs.

Principles and practices in advanced acetylene welding; welding, brazing of aluminum plate and sheets in flat, vertical positions; preparation and repair of aluminum castings and parts; white metal welding; brazing and welding of copper alloys; stainless steel welding; silver soldering and cast iron specimens.
*Prerequisite: WT 11.*

WT 20 ELECTRIC WELDING 8 Cr. - 352 Hrs.

Principles and applications of basic electric welding; shop safety; welding general types of joints with different types and sizes of electrodes; all positions.

WT 34 ELECTRIC WELDING (ADVANCED) 3 Cr. - 112 Hrs.

Theory, practices of difficult portions of welding: butt, flange, tee, lateral and "Y" joints; stainless steel in the flat and vertical positions; aluminum welding; dissimilar metals and sheet metal; acetylene cutting.
*Prerequisite: WT 20.*

WT 35 INERT GAS WELDING (TIG) 3 Cr. - 112 Hrs.

Application of theory in the manual welding of steel, stainless steel, aluminum and copper alloys in flat, vertical and overhead positions.
*Prerequisite: WT 34.*

WT 43 ACETYLENE WELDING (ADVANCED) 1 Cr. - 48 Hrs.

Principles and practices in all welded joints of SAE 4130 tubing, sheet metal and aluminum; correspond to joint design of aircraft industry.
*Prerequisite: WT 11.*

WT 44 CODE WELDING 3 Cr. - 112 Hrs.

Practical application and theory of welding to specifications and procedures recommended by American Welding Society; procedures covered: ASME, section VIII, unfired pressure vessels, AWS specifications for welded highway and railway bridges.
*Prerequisite: WT 34.*

WT 45 INERT GAS WELDING (MIG) 2 Cr. - 96 Hrs.

Theory and practice in steel plate, pipe, aluminum and stainless steel welded in flat, vertical and overhead positions.
*Prerequisite: WT 34.*

WT 47 PHYSICAL TESTING OF WELDS 1 Cr. - 48 Hrs.

Principle methods of testing and inspection used to determine soundness, quality and efficiency of welded joint or weldment; competent inspection and adequate tests prescribed by governing standards or codes.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

CHEMISTRY 100 – INTRODUCTION TO CHEMISTRY

For course description, see Chemistry courses, page 39.

ENGLISH 201 OR 202 – HISTORY OF ENGLISH LITERATURE

For course description, see English and Speech courses, page 42.

ENGLISH 211 – FUNDAMENTALS OF SPEECH

For course description, see English and Speech courses, page 42.

GOVERNMENT 201 – AMERICAN GOVERNMENT – NATIONAL

For course description, see Government courses, page 45.

GOVERNMENT 202 – STATE AND LOCAL GOVERNMENT

For course description, see Government courses, page 45.

HISTORY 201 – HISTORY OF THE UNITED STATES

For course description, see History courses, page 46.

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY

For course description, see Psychology courses, page 51.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY

For course description, see Sociology courses, page 51.

SPANISH 101 OR 102 – BEGINNING SPANISH

For course description, see Spanish courses, page 52.

# SCHOOL OF CONTINUING EDUCATION AND COMMUNITY SERVICES

*Evening and Summer Sessions offering courses from the Schools of Liberal Arts and Sciences and Applied Arts and Sciences and special programs, seminars, and workshops.*

## *FOR YOU IF YOU PLAN TO TAKE COURSES–*

To meet specific job requirements.
To facilitate job advancement.
To promote self-development.
To make up academic deficiencies.
To earn credit toward an Associate Degree.
To earn credit for transfer to other institutions.

## *TO BE ADMITTED–*

For part-time enrollment - (non-degree courses).
There are no prerequisites or requirements.

For part-time enrollment - (degree objective).

Acceptance in one of the degree programs at the College is restricted to applicants who can meet the regular admission requirements for specific programs in the School of Applied Arts and Sciences or the School of Liberal Arts and Sciences of the College. Students may apply for degree candidacy upon the successful completion of six credit hours of work.
Exception: Industrial Technology - 15 Credit Hours.

WILLIAM HOMISAK, Dean of the School of Continuing Education and Community Services, counsels "young people of all ages" about educational opportunities to meet their specific needs.

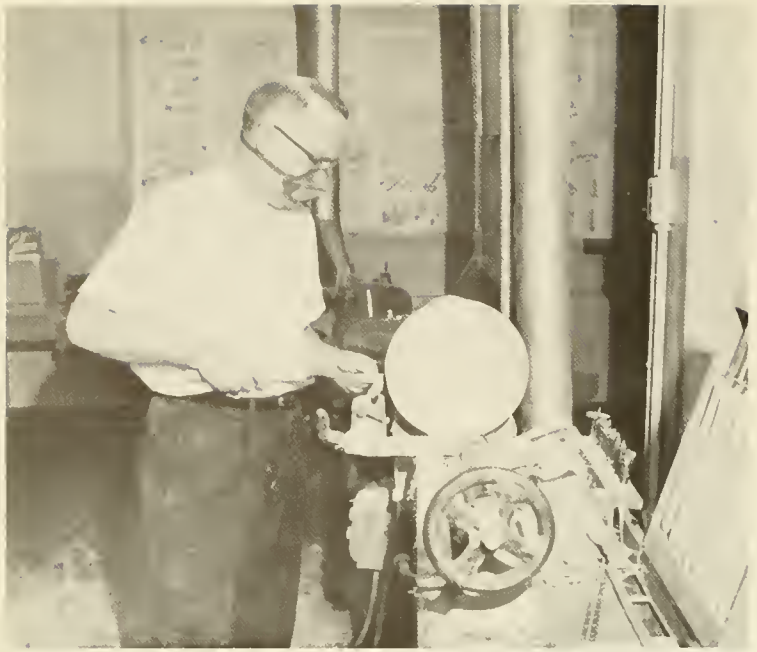
# DEAN HOMISAK INTRODUCES YOU TO THE SCHOOL OF CONTINUING EDUCATION AND COMMUNITY SERVICES

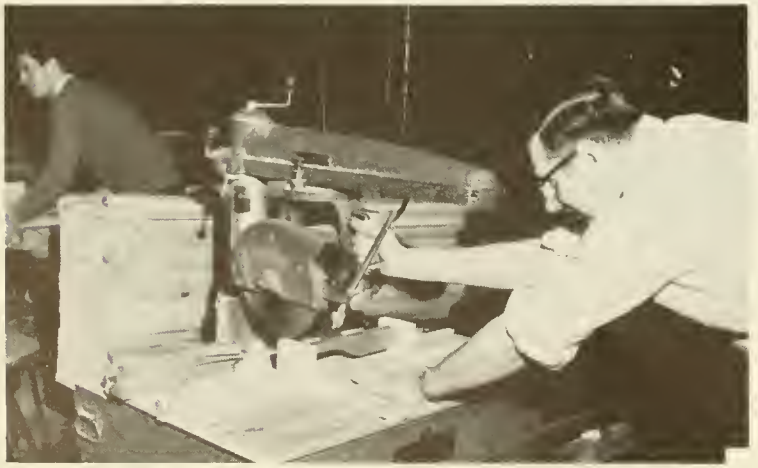
## THE PURPOSE

The general objectives of the Continuing Education and Community Services' programs are to provide educational opportunities and community services for all adults and to encourage participation by adults in various programs of study and self-development which will assist them in carrying on more effectively their civic, social, career, and economic responsibilities. Its operation is based upon the belief that ample and varied opportunities for training, exploration of new interests, acquisition of new information, and development in new skills will help build a more enlightened and better community.

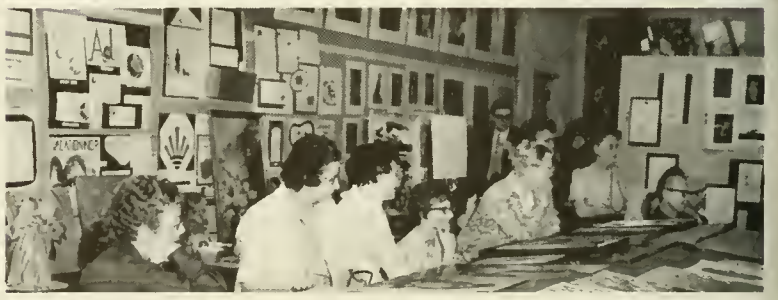
As a community institution, the evening sessions seek to serve the area through liberal arts' programs and special technical-vocational offerings. Responding to a growing demand, college transfer courses are included in the evening session curriculums. A student may be able to earn the Associate of Arts or the Associate of Science degree in the evening programs.

Through community services, special programs including seminars and workshops are available to government agencies, associations, industries, businesses and unions on an individual or contract basis. Organizations of this type may arrange for contract programs by contacting the Dean of Continuing Education and Community Services.





## *THE SCHOOL OF CONTINUING EDUCATION AND COMMUNITY SERVICES*



The desire of people of all ages to better understand themselves and the world they live in, and to receive general and specialized education, keeps the lights at The Williamsport Area Community College burning late into the night.

These are the lights of the School of Continuing Education and Community Services, a vital and integral part of the College's extended day program.

The School of Continuing Education and Community Services offers educational opportunities to many different people . . .

. . . to the person who must work during the day and desires to earn college credits in the evening.

. . . to the technician desiring to keep pace with today's rapid technological advances.

. . . to the person who wishes to improve his vocational skills.

. . . to housewives preparing for "second careers."

. . . to individuals seeking do-it-yourself skills.

. . . to men and women planning retirement.

. . . to the senior citizen.

. . . and, to the entire community — special training programs for government, business, industrial, professional and community organizations.

# *SCHOOL OF CONTINUING EDUCATION AND COMMUNITY SERVICES*

The School of Continuing Education and Community Services offers courses through the Schools of Liberal Arts and Sciences and Applied Arts and Sciences. Many of these courses, along with the regular School of Continuing Education and Community Services courses, are scheduled in the evenings and during the summers. Course offerings change periodically to keep in step with student needs and interests. Courses available for the Fall '69 semester are listed on pages 217 and 218.

The courses are so designed that college students may take them for additional credit to obtain an Associate Degree, a Certificate, or transfer credit; and interested adults may enrich their cultural backgrounds. The School of Continuing Education and Community Services maintains the College's "open door" policy in that anyone desiring academic credit or self improvement is encouraged to enroll in the School.

## SUMMER SCHOOL

The Summer School sessions of the School of Continuing Education and Community Services offer courses from the Schools of Liberal Arts and Sciences, Applied Arts and Sciences, and various developmental programs for —

. . . students of The Williamsport Area Community College who wish to complete their work sooner, to supplement the work of the regular college year, to accelerate their work, or to remove deficiencies.

. . . high school graduates who wish to complete one or two courses to be transferred to the college of their choice for advanced standing in their fall freshman class.

. . . students of other colleges and universities to take one or two courses for credit acceptable to their resident college.

. . . high school students who wish to remove deficiencies and prepare for a college career.

. . . graduating high school students who do not plan to attend college, but would like to increase their academic knowledge in a particular subject or field.

. . . adults desiring to take courses for personal or professional advancement.

. . . college graduates seeking an opportunity for intellectual pursuit in Continuing Education.

. . . those who cannot pursue a full-time college education, but who wish to earn credits while maintaining a full-time job.

# SCHOOL OF CONTINUING EDUCATION AND COMMUNITY SERVICES / Courses

## LIBERAL ARTS AND SCIENCES

| *Course* | *Credit* |
|---|---|
| Biology 101 - General Biology | 4 |
| Biology 203 - General Botany | 4 |
| Business Administration 201 - Principles of Accounting | 3 |
| Business Administration 250 - Business Law I | 3 |
| Chemistry 101 - General Chemistry I | 4 |
| Chemistry 103 - Advanced General Chemistry | 4 |
| Chemistry 201 - Quantitative Analysis | 4 |
| Economics 201 - Principles of Economics | 3 |
| Economics 203 - International Economics | 3 |
| Economics 205 - Personnel Relations | 3 |
| Education 201 - Introduction to Education | 3 |
| English 100 - Basic English | 0/3 cr. eq. |
| English 101 - English Composition | 3 |
| English 102 - English Composition | 3 |
| English 201 - History of English Literature | 3 |
| English 202 - History of English Literature | 3 |
| English 211 - Fundamentals of Speech | 3 |
| French 101 - Beginning French | 4 |
| French 201 - Intermediate French | 3 |
| German 101 - Beginning German | 4 |
| German 201 - Intermediate German | 3 |
| Geography 101 - Physical Geography | 3 |
| Geology 101 - Elements of Geology and Historical Geology | 3 |
| Government 201 - American Government-National | 3 |
| Government 202 - State and Local Government | 3 |

| *Course* | *Credits* |
|---|---|
| History 101 - World History | 3 |
| History 201 - History of the United States | 3 |
| History 202 - History of the United States | 3 |
| History 212 - Twentieth Century European | 3 |
| Mathematics 100 - Fundamentals of Mathematics | 3 |
| Mathematics 101 - College Algebra | 3 |
| Mathematics 105 - Calculus I and Analytic Geometry | 4 |
| Mathematics 200 - Fundamentals of Mathematics | 3 |
| Mathematics 201 - Statistical Analysis | 3 |
| Mathematics 203 - Elementary Statistics | 3 |
| Mathematics 205 - Calculus III and Analytic Geometry | 4 |
| Philosophy 101 - Introduction to Philosophical Analysis | 3 |
| Philosophy 201 - Symbolic Logic | 3 |
| Physics 101 - Introductory Physics | 4 |
| Physics 105 - General | 4 |
| Physics 210 - Mechanics | 4 |
| Psychology 101 - General Psychology | 3 |
| Psychology 205 - Abnormal Psychology | 3 |
| Sociology 101 - Introduction to Sociology | 3 |
| Spanish 101 - Beginning Spanish | 4 |
| Spanish 201 - Intermediate Spanish | 3 |
| Spanish 211 - Advanced Spanish Composition And Conversation | 3 |
| Physical Education | 1 |
| Education 102 - Children's and Young Adults' Literature | 3 |
| College Skills - G.E.D. | To be determined |

# APPLIED ARTS AND SCIENCES

## FOOD SERVICE

| *Course* | | *Credits* |
|---|---|---|
| FS15 | Basic Food Theory and Preparation | 2 |
| FS16 | Introduction to Food Services Industries | 1 |
| FS17 | Nutrition and Health | 3 |
| FS19 | Quality Foods II - Theory and Preparation | 3 |
| FS20 | Food Purchasing, Storage and Sanitation | 3 |
| FS21 | Chemistry of Foods | 4 |

## JOURNALISM AND BROADCASTING

| *Course* | | *Credits* |
|---|---|---|
| JO10 | Newswriting | 3 |
| JO13 | Feature Writing | 3 |
| JO14 | Editing | 3 |
| JO15 | Fine Arts Seminar | 1 |
| JO19 | Reading and Comprehension Improvement | 2 |
| JO20 | Note-Taking | 2 |
| JO21 | In-service Training | 2 |
| JO22 | In-service Training (Advanced) | 2 |
| BR12 | Advanced Announcing | 3 |
| BR13 | Radio Programming | 3 |
| BR22 | In-service Training | 2 |

## LIBRARY ASSISTANT

| *Course* | | *Credits* |
|---|---|---|
| LS10 | Introduction to Libraries and Books | 3 |
| LS11 | Internship I | 3 |
| LS15 | Technical Services I | 3 |
| LS31 | Book Selection and Bibliography | 3 |

# SCHOOL OF CONTINUING EDUCATION AND COMMUNITY SERVICES

## HOMEMAKING

| *Course* | | *Credits* |
|---|---|---|
| HS01-C | Beginning Sewing | 1 |
| HS01-C | Beginning Sewing | 1 |
| HS01-C | Beginning Sewing | 1 |
| HS03-C | Advanced Clothing Construction | 1 |
| HS04-C | Tailoring | 1 |
| HS06-C | Rug Hooking | 1 |
| HM01-C | Home Management | 1 |

## BUSINESS

| *Course* | | *Credits* |
|---|---|---|
| BA01-C | Accounting - Introduction | 1 |
| BA02-C | Accounting - Intermediate | 1 |
| BA06-C | Federal Taxes | 1 |
| BE01-C | Business English | 1 |
| BM01-C | Business Machines | 1 |
| BM04-C | Personal Investments | 1 |
| BS01-C | Shorthand I | 1 |
| BS03-C | Shorthand II | 1 |
| BS04-C | Office Practice | 1 |
| BS05-C | Executive Secretarial Training | 1 |
| BT01-C | Typewriting I | 1 |
| BT02-C | Typewriting II | 1 |
| BM07-C | Small Business Management | 1 |
| EC14-C | Real Estate Appraisal | 3 |
| DP01-C | Introduction to Data Processing | 2 |
| DP01-C | Introduction to,Data Processing | 2 |
| DP02-C | Technical Computer Programming - Fortran | 2 |
| DP05-C | Business Computer Programming - Cobol | 2 |
| DP06-C | Technical Computer Programming - 360 Theory | 2 |
| CS10-C | Basic Data Processing Machines | 3 |
| CS12 | Computer Programming II - Fortran | 3 |

## GENERAL

| *Course* | | *Credits* |
|---|---|---|
| GC01-C | Painting I - Beginning | 1 |
| GC09-C | Painting II - Advanced | 1 |
| GC05-C | Pottery and Ceramics II | 1 |
| GC06-C | Applied Design (Home Art) | 1 |
| GC07-C | Graphics (Print Making) | 1 |
| GS08-C | Sculpture | 1 |
| GW01-C | Avocational Woodworking | 1 |
| GW02-C | Beginning Woodworking | 1 |
| GS03-C | Pre-retirement Counseling | Spec. |
| VC01-C | Counseling for Education and Work | 1 |
| CG01-C | Toward Understanding Minorities in the Local Community | 1 |
| GB01-C | W.A.C.C. Symphonic Band | Spec. |

## TECHNICAL AND TRADE

| *Course* | | *Credits* |
|---|---|---|
| AM01-C | Small Gas Engines | 1 |
| AM02-C | Auto Tune-up and Maintenance | 1 |
| AM05-C | Auto Mechanics for Women | 1 |
| CA02-C | Carpentry and Woodworking | 1 |
| ET01-C | Electronics A | 1 |
| ET03-C | Electronics C | 1 |
| EW02-C | Electrical Fundamentals | 1 |
| EW05-C | Electrical Fundamentals - Industrial and Construction | 2 |
| EW06-C | Advanced Electrical Theory | 2 |
| EW07-C | Electrical Motor Controls | 2 |
| MS01-C | Machine Shop | 1 |
| MS03-C | Precision Measurement and Inspection | 1 |
| TQ01-C | Quality Control - Section I | 1 |
| TQ03-C | Quality Control - Section II | 2 |
| DC06-C | Technical Drawing (Drafting, Technical Illustration and Engineering Drafting) | 1 |
| DC06-C | New Products Design | 1 |
| GA02-C | Graphic Arts Workshop | 2 |
| WD03-C | Welding - Combination | 1 |
| CT10 | Surveying - Introduction | 2 |

## School of Continuing Education and Community Services

# INDUSTRIAL TECHNOLOGY PROGRAM

The Industrial Technology Curriculum is designed to meet the needs of the working technicians, craftsmen, supervisors, or junior executives in business or industry who wish to earn an Associate Degree while being fully employed. Candidates for this degree program must be high school graduates or the equivalent. Program emphasis is placed on communication skills, mathematics, the sciences, and other knowledge required in today's modern industries.

Each student is permitted to enroll for courses with the possibility of completing the Associate Degree requirements within five years. The program is also open to anyone who does not wish to become a degree candidate. The procedure for enrolling in these courses is the same as that for any other course in the School of Continuing Education and Community Services. Upon completion of fifteen credits, a student may make formal application as a candidate for an Associate Degree in Industrial Technology. A minimum of sixty credits is required to qualify for the Associate Degree.

### GENERAL EDUCATION

| | | | |
|---|---|---|---|
| | | *Mathematics (9 credits required)* | |
| IM | 10-C | Introduction to Mathematics | 3 |
| MAT | 12-C | Algebra | 3 |
| MAT | 19-C | Trigonometry | 3 |
| MAT | 31-C | Calculus | 3 |
| MAT | 40-C | Industrial Statistics | 3 |
| | | **Science (6 credits required)* | |
| CHEM | 10-C | Introduction to Chemistry | 3 |
| PHY | 20-C | Physics I-Mechanical | 3 |
| PHY | 22-C | Introduction to Metallurgy | 4 |
| PHY | 23-C | Physics II-Electricity and Magnetism | 3 |
| PHY | 32-C | Physics III-Heat and Light | 3 |
| | | *English and Humanities (6 credits required)* | |
| ENG | 11-C | Language and Composition | 3 |
| ENG | 14-C | Speech | 3 |
| ENG | 15-C | Technical Writing | 3 |
| | | ***Social Sciences (12 credits required)* | |
| ECO | 11-C | Economics | 3 |
| ENG | 31-C | Literature of the Western World | 3 |
| IM | 43-C | Government and Business | 3 |
| PSY | 101-C | General Psychology | 3 |
| PHIL | 101-C | Introduction to Philosophy | 3 |
| SOC | 101-C | Introduction to Sociology | 3 |
| SOC | 102-C | Anthropology-General | 3 |
| HIST | 101 or 102-C | United States History | 3 |

### INDUSTRIAL AND MANAGEMENT PROCESSES

| | | | |
|---|---|---|---|
| | | ****27 credits required* | |
| BA | 13-C | Applied Accounting-Managerial | 3 |
| BM | 36-C | Marketing | 3 |
| BM | 41-C | Business Law | 3 |
| CS | 01-C | Introduction to Data Processing | 3 |
| EI | 31-C | Basic Instrumentation | 3 |
| IM | 20-C | Industrial Organization and Management | 3 |
| IM | 30-C | Work Simplification, Time Study and Incentives | 3 |
| IM | 31-C | Supervision-Human Relations | 3 |
| IM | 32-C | Quality Control | 3 |
| IM | 41-C | Industrial and Public Relations | 3 |
| IM | 44-C | Industrial Safety | 2 |
| IM | 47-C | Industrial Psychology | 3 |
| IT | 13-C | Blueprint Reading and Sketching | 2 |
| IT | 20-C | Basic Drafting and Tool Design | 3 |
| IT | 21-C | AC - DC Theory | 3 |
| IT | 22-C | Electronics | 3 |
| IT | 23-C | Metal Fabrication Theory-Welding | 3 |
| IT | 24-C | Principles of Metalworking-Machine | 3 |
| TM | 14-C | Mathematical Calculations-Slide Rule | 2 |

*Must include CHEM 10-C Introduction to Chemistry.

**Must include ECO 11-C Economics.

***Must include BA 13 - C Applied Accounting-Managerial; CS 01 - C Introduction to Data Processing; IM 31 - C Supervision-Human Relations; IT 13 - C Blueprint Reading and Sketching.

In order to best prepare himself for his vocation, a student may be permitted to select courses from the GENERAL EDUCATION areas to fulfill the 27 - credit requirement. Qualified Industrial Technology students may also substitute certain courses from the School of Liberal Arts and Sciences and the School of Applied Arts and Sciences with the approval of the respective Deans.

Course descriptions are available upon request at the office of the Dean of Continuing Education and Community Services.

Scheduling is based upon the student's academic qualifications and the required course sequences.

A 2.0 average must be maintained and a passing grade must be achieved in each required course used to meet Associate Degree standards.

Many courses are scheduled one night per week, usually between the hours of 7:00 and 10:00.

Cost and other charges: based upon standard rates of the College.

GRANT M. BERRY, SR., Dean of Student Services

# *DEAN BERRY EXPLAINS STUDENT SERVICES*

From the time you apply for admission to the College, and throughout your college career, you will benefit from the professional assistance available to you through Student Services.

These services include admissions, registration, testing, counseling, vocational diagnostic clinic, orientation, financial aid, student activities, health services, college transfer, and job placement — and help from a staff trained to aid you in solving problems that may confront you in college or in contemporary society.

*The College Offices within Student Services are*

Dean of Student Services
Admissions
Registration
Counseling and Guidance, including
The Vocational Diagnostic Clinic
Financial Aid
Student Activities and Affairs
Health Services
Placement

The responsibilities of each of these offices in meeting your needs will be indicated in this section.

# ADMISSIONS

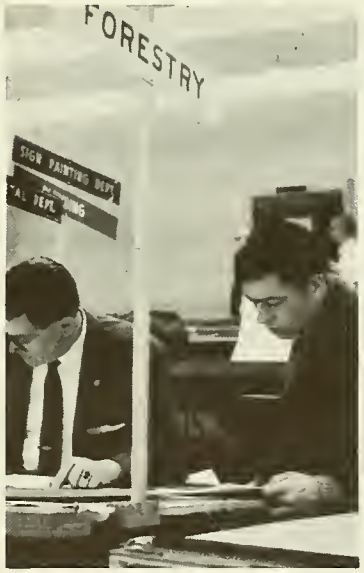
## ADMISSION REQUIREMENTS


| | Page |
|---|---|
| School of Liberal Arts and Sciences | 19 |
| School of Applied Arts and Sciences | 57 |
| School of Continuing Education and Community Services | 211 |

Individual initiative and capability keynote our admission's policy. A student's past academic records are important, but they do not represent an accurate estimate of his career potential. Our degree and certificate programs have been designed to meet a variety of needs and desires. All we expect is that you learn as much as you reasonably can in view of your individual capacity.

Subscribing to the belief that anyone who seeks more education should find it and hoping to prevent rather than support unemployable citizens in our society, the College promotes and adheres to its open-door policy. Our invitation has been accepted. Applicants for admission in our full-time programs have ranged in age from seventeen to "over thirty." Many of them have exceptional ability and a keen desire for learning. However, high school and college dropouts have also re-entered school. Married students, over ten percent of our full-time students, have discovered with us opportunities to earn an Associate Degree while fulfilling family responsibilities.

We are proud to say that we are able to offer to nearly every applicant admission into a program in which he has a reasonable chance for success. We are able to do this not only because of our wide variety of educational programs, but also because of our guidance and counseling services. We provide professional advice to help you select a program suited to your aptitudes, abilities, and needs. In addition, our College Skills Program for the development of language, mathematics, and science skills will help prepare you for college-level programs to make possible the achievement of your educational goals.



## GENERAL ADMISSIONS POLICY

The admissions policy at The Williamsport Area Community College is a liberal one, designed to extend an educational opportunity to all who show potential for achievement. Your admission to the College is contingent upon meeting the requirements of the particular program or field of study you desire.

## ORDER OF PREFERENCE FOR ADMISSION

Preference will be given:

First, to applicants from sponsor districts;

Second, to applicants from districts sponsoring other Pennsylvania community colleges;

Third, to applicants from Pennsylvania school districts not sponsoring community colleges;

Fourth, to out-of-state applicants.

## ADMISSION PROCEDURE AND INFORMATION

Application forms may be obtained from the Admissions Office, The Williamsport Area Community College, 1225 West Fourth Street, Williamsport, Pennsylvania 17701. The telephone number is (717) 326-3761 extension 237.

An application should be submitted as early as possible in the year in which you expect to enroll, but not more than one year in advance of that date. Preference will be given to applications received before March 1.

An interview is not required prior to submission of an application. However, if you need additional information or aid in selecting a course or program, you may arrange for a personal interview by writing or calling the Admissions Office at the address listed in the preceding paragraph. Requests for personal interviews should be made at least three weeks in advance of the date the interview is desired.

## TRANSFER STUDENT

If you seek to transfer to The Williamsport Area Community College, you must submit an official transcript of the course work completed at any other college or colleges.

Courses for which transfer credit is sought will be evaluated by the College. A maximum of 30 credit hours may be transferred toward completing an Associate Degree. If you plan to graduate from The Williamsport Area Community College, the last semester must be completed at the College.

If after completing four semesters you lack some credits required for a degree, you may, with approval of the Dean, be permitted to take up to six semester credit hours from another college to fulfill requirements for the Associate Degree from The Williamsport Area Community College. Only grades of C or better are acceptable for such credit transfer.

## TRANSFER OF CREDIT

Credits earned in the College Transfer Programs of The Williamsport Area Community College may be transferred to the four-year institution of your choice provided you meet the requirements of the receiving college or university. It is for this reason that you should confer, either by letter or personal interview, with the admissions officer at the four-year institution for detailed information about curriculum and transfer regulations at that school.

The responsibility to determine whether you will meet the admission requirements of the college to which you intend to transfer rests with you.

Visits by admissions representatives of other colleges will be made during the course of the college year. Information concerning these visits will be posted in the office of the Placement Officer. Students planning to transfer should consult with these representatives as they visit the College campus.

A grade-point average of 2.50 will be required for transfer recommendation to another college.

## COUNSELING AND GUIDANCE

One role of the community college is to assist you in making the often difficult transition from high school to the more rigorous demands of college study. The College maintains a full-time guidance staff for this purpose. This staff will counsel and guide you according to your respective aptitudes, abilities, and interests before and after you enroll.

*Admissions counseling* is provided to assist you to understand the various types of programs available in the College and to clarify matters which pertain to qualifications and prerequisites.

*Vocational counseling* is provided to help you if you wish additional assistance in selecting a vocational objective or field of study.

*Academic Advising* is provided by a faculty advisor who will be designated to help you prepare class schedules and plan your academic program to meet your college transfer and career goals.

*Personal counseling* is provided based on your individual needs beyond the scope of admissions, vocational, or academic counseling.

## VOCATIONAL DIAGNOSTIC PROGRAM

If you require intensive vocational counseling, you may take advantage of the three-week Vocational Diagnostic Program offered approximately ten times during the school year. This program is designed to assist you in career selection through aptitude testing, individual counseling, extensive vocational information and actual job trials in the various departments.

This service is available to you whether or not you plan to attend the College. For fees and additional information write:

Vocational Diagnostic Program
The Williamsport Area Community College
or phone Williamsport (717) 326-3761 extension 241

## REGISTRATION

You must register in person on the dates specified in the the College Calendar. If your registration is not completed, including payment of all required fees during the days specified as registration days, you will be charged a late registration fee of $10.00.

# *SPONSOR SCHOOL DISTRICTS*

**Bradford County**
*Canton Area*
*Troy Area*

**Clinton County**
*Bald Eagle Township*
*Beech Creek Borough*
*Beech Creek Township*
*Castanea School District*
*Dunnstable Township*
*Flemington Boro*
*Gallagher Township*
*Lock Haven*
*Mill Hall Borough*
*Pine Creek Township No. 2*
*Porter Township*
*Woodward Township*

**Lycoming County**
*East Lycoming*
*Jersey Shore Area*
*Montoursville Area*
*South Williamsport Area*
*Williamsport Area*

**Northumberland County**
*Line Mountain*
*Warrior Run*

**Snyder County**
*Center Township*
*Chapman Township*
*Franklin Township*
*Freeburg Borough*
*Jackson Township*
*Middleburg Borough*
*Middlecreek Township*
*Monroe Township*
*Penn Township*
*Perry Township*
*Selinsgrove Borough*
*Shamokin Dam*
*Union Township*
*Washington Township*
*West Perry Township*

**Sullivan County**
*Sullivan County*

**Tioga County**
*Southern Tioga*
*Wellsboro Area*

**Union County**
*Mifflinburg Area*

*If your school district is listed above—*
*. Your tuition per semester will be* *$162.50*
*. Your tuition per part-time (credit hour) will be* *$ 13.60*

*If your school district is not listed above—*
*check to find out if it has become a sponsor since this catalog was issued.*

**Sponsor School Board Members** *meet with College administrators to plan educational opportunities for area citizens.*

# *TUITION AND FEES*

## APPLICATION FEE $10.00

A non-refundable application fee (required to be paid only once) must accompany your application.

## CLASS RESERVATION DEPOSIT $50.00

In order to hold a class reservation, all full-time students will be required to make a $50.00 non-refundable class reservation deposit within the time designated in their notices.

If the student enrolls at the designated time, this deposit will be credited toward his tuition.

If he does not enroll at this time, the deposit is non-refundable and cannot be carried forward to another semester.

## TUITION AND FEES

The tuition and fees for a 16 - week semester are as follows:

| | Resident of Sponsor District | Resident of Non-sponsor District | Out-of-State Resident |
|---|---|---|---|
| Tuition | $162.50 | $325.00 | $487.50 |
| Service Fee | None | 70.00 | 140.00 |
| Activity Fee | 7.00 | 7.00 | 7.00 |
| | $169.50 | $402.00 | $634.50 |

If you are a resident of a sponsor district of The Williamsport Area Community College, after being notified that you have been accepted, you must have the secretary of your local school board complete a resident tuition form in order to be eligible for sponsor district tuition rates. This form should be mailed to the Business Office of the College as soon as possible prior to registration.

If you are a resident of a district which is a sponsor of some other community college, you must obtain permission from the board of trustees of that particular college to qualify for sponsor district tuition. If this permission is not obtained in writing, it will be necessary for you to pay the same tuition as out-of-state residents. If permission is obtained, tuition and fees will be:

| | |
|---|---|
| Tuition | $162.50 |
| Service Fee | 70.00 |
| Activity Fee | 7.00 |
| | $239.50 |

The tuition and fees in the School of Continuing Education and Community Services are as follows:

| | Per credit hour |
|---|---|
| Resident of Sponsor District | $13.60 |
| Resident of Non-sponsor District | $33.00 |

*Charges are subject to change at any time without prior notification.*

## WITHDRAWALS AND REFUNDS

Charges for tuition are refundable upon withdrawal from the College only if you obtain an official withdrawal form from the Dean of your School and present it to the Business Office.

Refunds of tuition will be made according to the following schedule:

| | |
|---|---|
| 1st week of classes | 80% Refund |
| 2nd week of classes | 70% Refund |
| 3rd week of classes | 60% Refund |

No refunds will be made after the third week of classes. Registration, activity and service fees are not refundable.

## HOUSING

The cost per student for accommodations in a double room at the Lycoming Hotel dormitory available for women only is $285.00 per semester.

The College does not provide housing facilities for men. As a service to those who may have need for housing, however, the Student Affairs Office maintains a listing of rooms submitted by prospective landlords. A survey of the facilities listed by the College indicates that room and board for men will cost approximately $20.00 to $25.00 a week.

## BOOKS, TOOLS, AND SPECIAL CLOTHING

You must purchase all textbooks. Since it is the policy of the College to keep your expenses as low as possible, a College bookstore is operated on a low-cost basis.

All special and large tools will be supplied by the College. A list of required tools will be furnished by the instructors. Only personal tools required in the respective shops and laboratories must be purchased by you. Some shops and laboratories require their students to wear protective clothing. These articles may be purchased at the College bookstore on the same low-cost basis.

Lycoming Hotel Facilities

Popular Rooming House for Men

# FINANCIAL AID

## *WHO SAYS YOU CAN'T AFFORD IT?*

Of course it costs money to attend The Williamsport Area Community College . . . or any other institution of higher learning for that matter. But each semester thousands of students are finding they can afford it.

What's more, WACC graduates are saying that their decision to attend college was the wisest one that they ever made. The time . . . effort . . . and money . . . were wise investments in a lifelong career.

On the following pages you will find a description of the financial assistance programs available to you. The purpose of these programs is to make college a reality for an interested and qualified person like you.

Don't say you can't afford it. You can't afford not to!

## *HOW MUCH WILL YOU NEED?*

The following table of expenses has been compiled from the actual experiences of The Williamsport Area Community College students. It assumes that the student lives in a sponsor district, is taking a full-time course load each semester and is living at home but is paying about $40.00 per month for board and room.

**ESTIMATED EXPENSES FOR THE ACADEMIC YEAR**

| | |
|---|---|
| Tuition | $ 325.00 |
| Activity Fee | 14.00 |
| Books and Supplies | 75.00 |
| Board and Room (nine months) | 360.00 |
| Travel (bus or gasoline) | 80.00 |
| Clothing | 100.00 |
| Personal | 200.00 |
| | $1154.00 |

Remember, these are average figures and will vary from student to student. Students from Pennsylvania non-sponsor school districts should plan to pay $465.00 more in tuition and fees. Students from out-of-state should plan to pay $930.00 more in tuition fees. Students who do not live at home will have higher board and room costs.

## *WHAT FINANCIAL HELP IS AVAILABLE?*

The Williamsport Area Community College's Financial Aid program operates in the following areas:

Scholarships
Loans
Educational Assistance for Veterans
Social Security Educational Assistance
Vocational Rehabilitation Assistance
Part-Time Employment

## *SCHOLARSHIPS*

### PENNSYLVANIA HIGHER EDUCATION ASSISTANCE AGENCY SCHOLARSHIP

The Pennsylvania Higher Education Assistance Agency awards scholarships to students based upon academic achievement and financial need. There are three main types of scholarship awards:

Group I — Academic Scholarships. High school seniors entering two-year Associate Degree College Transfer Programs at The Williamsport Area Community College must compete in the Scholastic Aptitude Test of the College Entrance Examinations Board for these scholarships. Selection of students to receive Group I awards will be made following receipt of the applications and will be based upon test score, rank in high school class, available state funds and need for financial assistance as determined by the Pennsylvania Higher Education Assistance Agency.

Group II — Academic Scholarships. This is a freshman financial need scholarship. Awards are designed to help needy students attending approved four-year degree granting institutions. This includes those students entering community colleges or junior colleges in the Liberal Arts Programs.

These awards are made on the basis of the student's need for financial assistance, an SAT total score of 800 or higher, and his ability to successfully complete the course of study for which he is enrolled.

Group II B — Academic Scholarships. Students who are enrolled or plan to enroll in an approved course of study in any trade, technical, or business school within the Commonwealth of Pennsylvania may apply for a scholarship in Group II when they have been accepted for enrollment, but not prior to high school graduation.

The program of study must be a two-year program in the Applied Science field, in either the Associate Degree or the Certificate Program, after which a student receives a degree or a certificate.

Group III — Academic Scholarships. Special Freshmen and Upper Class Scholarships. Students enrolled in the sophomore year or students who enter the freshman class with a lapse of at least one year between high school graduation and college enrollment within the Commonwealth of Pennsylvania may be considered for a Group III award. The financial aid officer at The Williamsport Area Community College will recommend students to the Pennsylvania Higher Education Assistance Agency for these

awards on the basis of financial need and availability of Group III funds. These awards may be renewed from the freshman to the sophomore year upon the recommendation of the College. Applications for Group II and Group III scholarships may be obtained from high schools, the College Financial Aid Office, or the Pennsylvania Higher Education Assistance Agency in Harrisburg.

### SYLVANIA ELECTRIC PRODUCTS, INC. SCHOLARSHIPS FOR YORK COUNTY RESIDENTS

The Sylvania Electric Products of York, Pennsylvania, has established two $1,000 Scholarships to be awarded to graduating seniors from any of the York County high schools who are interested in obtaining additional education in machine trades subjects. Scholarship applications may be secured at the guidance office of any York County high school.

## *LOANS*

### PENNSYLVANIA HIGHER EDUCATION ASSISTANCE AGENCY FEDERAL GUARANTY LOAN PROGRAM

The Pennsylvania Higher Education Assistance Agency administers the Federal Guaranty Loan Program. This program enables residents of Pennsylvania to borrow up to $1,000 per academic year from approved lending institutions in Pennsylvania to meet educational expenses. The student pays no interest on the loan until after graduation or withdrawal from the college, after which he must pay seven percent interest during the repayment period.

After the student graduates from high school, he should contact a local participating lending institution to initiate an application for a loan.

### THE G. WALTER SMITH, JR. LOAN FUND

This loan fund was established in the memory of G. Walter Smith, Jr. Students who have attended the College for at least two semesters may apply for loans from this fund. Information and applications may be obtained from the financial aid officer at the school.

### EDUCATIONAL ASSISTANCE FOR VETERANS

The Williamsport Area Community College is an accredited college for the education of veterans as authorized by Public Laws 634,815,894, and 358.

A veteran who has served continuously on active duty for a period of at least 181 days, any part of which was after January 31, 1955, and who was discharged or released under conditions other than dishonorable, or any veteran who has served less than 181 days may be eligible if he was discharged or released because of service-connected disability.

Veterans may apply to the Veterans Administration Office for education or training under this program. Additional information may be obtained by writing to the Veterans Administration Office in Philadelphia, Pennsylvania. Applications are available at the Admissions Office.

### SOCIAL SECURITY EDUCATIONAL ASSISTANCE

The social security law provides monthly benefits to children when a parent on whom they were dependent dies or starts receiving social security retirement or disability benefits. The payments can be made until age 22, without regard to disability, provided the child is a full-time student in an educational institution.

### VOCATIONAL REHABILITATION ASSISTANCE

Financial assistance in varying proportions is available through the Office of Vocational Rehabilitation for applicants who are disabled. For further information concerning this program inquiries should be directed to the local Office of Vocational Rehabilitation.

### WORK-STUDY PROGRAM

This is a Health, Education, and Welfare Department program that provides part-time employment for qualified students. Under this program, students who have financial need may work at college-oriented jobs. When classes are in session, students are limited to 15 hours per week with hourly rates ranging from $1.35 to $1.50 per hour depending on the work project. A list of such part-time jobs is available in the Student Affairs Office.

### PART-TIME EMPLOYMENT

Because of changing times and conditions this type work cannot be depended upon. However, a list of such employment is maintained in the Placement Office and students use the office frequently for part-time work placement.

William R. Anderson, armless WACC graduate, was hailed as an 'inspiration' when he received the Handicapped State Employee of the Year Award. He is a sign painter in the Lehigh County maintenance department in Allentown. In this photograph he shows Governor Shafer how he paints highway markers.

WILLIAMSPORT AREA
COMMUNITY COLLEGE

# *STUDENT LIFE IS EXCITING AND REWARDING!*

## ORIENTATION PROGRAM

During the first semester all freshmen are required to participate in an orientation program which includes a tour of the campus and a series of lectures and discussions on campus activities.

## STUDENT AFFAIRS

The majority of our students tell us they enjoy being students here. Those concerned with making them happy are largely preoccupied with encouraging their involvement in student activities. They try to guide them to a comprehension of Andre Guide's wise observation that "Man's happiness lies not in freedom, but in his acceptance of a duty."

## STUDENT GOVERNMENT

The Student Government seeks to improve the general welfare of the entire student body. Following the adoption of a new constitution, its major areas of concern now are more effective campus communication, increased student participation in extra-curricular activities, and involvement in long-range plans for a new Student Union Building.

New on the student government scene, a learning-ground for leadership, is the Women's Student Organization. This group has jurisdiction over many rules of dormitory life, sponsors a varied program designed to reflect the interests of women students, and acts as a sounding board for their views.

## CLUBS

Now active on campus are the following:

Architectural Club
Biology Club
Chi Gamma Iota (Veterans)
Circle K Club
Computer Science Club
Drama Club
Forestry Technician Club
Gamma Epsilon Tau (Graphic Arts)
Glee Club
International Relations Club
Mechanical Engineering Club
Outing Club
Phi Beta Lambda (Business)
Women's Student Organization

New student clubs and organizations are constantly being formed:

1. Special departmental groups which include those who have a common interest or educational purpose
2. Honorary groups where membership is earned as an award for achievement
3. Service groups which exist to serve the College or community

**The Student Services Staff** *is responsible for innovative programs which help make student life exciting and rewarding!*

**Student Government Officers** *and advisors meet with the President and the Vice President to discuss student needs.*

## SOCIAL EVENTS

The Student Council sponsors a series of dances, Fall and Spring Weekends, and many other social events during the school year.

## ATHLETICS

The College subscribes to the belief that well-balanced intramural and intercollegiate sports' programs play an important role in the overall purpose of an educational institution and sponsors these activities as an integral part of its educational program.

## INTRAMURALS

Intramurals provide an opportunity for you to participate in active competition to improve your physical strength and skill, to pursue beneficial leisure time activities, and to develop friendships. The Physical Education Department conducts a wide variety of intramural athletic leagues for men and women. These activities include touch football, soccer, basketball, volleyball, bowling, table tennis, wrestling, tennis, golf, track and field, softball, handball, horseshoes, and others.

## INTERCOLLEGIATE SPORTS

The Intercollegiate Sports Program at the College is under the direction of the Physical Education Department. At present, the College has a basketball team which is a member of the National Junior College Athletic Association and a wrestling team, a member of the same association.

## COLLEGE COLORS AND NICKNAME

The colors of the College are gold and burgundy and the athletic teams are nicknamed the Wildcats. Both the College colors and the nickname were selected by popular vote of the students.

## CHEERLEADING

Cheerleaders represent the student body at all athletic contests. This activity is under the direction and supervision of Mrs. Dorothy Angeli. Announcements for tryouts are held each Fall and any student may try out for the squad. Members are selected on the basis of skill, personality, poise, and enthusiasm.

# *SPECIAL EVENTS*

**Madame Chennault** *charmed administrators, students . . . and the photographer*

The cultural environment of the College, and indeed of the entire community, is enhanced by a balanced program of concerts, lectures and films. Outstanding among past presentations was the Pennsylvania Ballet. Other events included the Giles and Archer folk music duet, an organ recital by John Rodland, the Lehigh Poetry Quartet, a reading by George Starbuck of his own poems, lectures by Marquis Childs, Rabbi David Schwartz, Simeon Booker, and Madame Chennault. The College cooperated with the Community Arts Festival by sponsoring the Bucknell Symphony Orchestra and the Lock Haven Music Club Oratorio Choir.

**Pennsylvania Ballet Company** *thrilled the audience with an exciting performance*

**and Archer** *provided fine folk music for an enthusiastic audience*

**Marquis W. Childs,** *nationally syndicated Washington columnist*

**Simeon Booker,** *noted journalist, visited with students and faculty members*

The College welcomes the active partnership of your parents. As a feature of its orientation program, which seeks to assist you in adjusting to college life, the College holds a reception for parents in the early part of each school year.

Members of the administration and faculty present the college viewpoint and inform your parents of the problems which face you in college today. Methods of coping with these difficulties by helping you develop proper study habits and self-discipline are discussed.

The College seeks to achieve a measure of collaboration in working for your best interests by acquainting your parents with various aspects of academic life.

# PARENTS' DAY

## PUBLICATIONS

The official College newspaper is the *Spotlight,* published at regular intervals throughout the College year. The *Spotlight* uses student and faculty talent in editing, writing, photography, and technical production. Staff positions are open to freshmen and sophomores.

*Montage* is the College yearbook which provides a pictorial history of the school year with a focus on the graduating class. Practical experience in management, writing, and editorial work is available to freshmen and sophomores through staff membership.

The *Student Handbook* is published annually by the Publications Department in cooperation with the Student Government. It is distributed to all students and faculty at the beginning of each College year. It is the College guide and directory. It will keep you up to date on Academic Regulations and Student Services.

The *Daily Crier* is a news-letter sponsored by the Office of Student Affairs for the purpose of keeping the student body and the faculty informed on current issues, announcements, programs, and activities that affect all Schools of the College.

## STUDENT CONDUCT

On admission to the College you accept unqualified commitment to conduct yourself at all times, both on and off the campus, in a responsible manner conforming with generally accepted standards of adult behavior. It is expected that as a student of the College you will show common courtesy and respect for College officials, faculty and employees. You are expected to understand and accept College regulations and to respect the directives of those authorized to enforce regulations. If you conduct yourself in a manner contrary to the best interest of the College, you will be subject to penalties as the circumstances justify, including suspension or expulsion.

## HOUSING

Attractive dormitory facilities supervised by a housemother are provided at the Lycoming Hotel for all women students. The College does not provide dormitories for men. However, as an aid to students seeking living quarters, the College publishes a list of available accommodations. The College does not sponsor, approve, or disapprove the listed living quarters. Students under the age of twenty-one are not permitted to live in apartments. Change of residence during a semester must be approved by the Director of Student Affairs.

## INSURANCE

A student sickness and accident policy, provided through the Educators Mutual Life Insurance Company, is available to you at a nominal cost. Application forms may be obtained in the dispensary.

## HEALTH SERVICE

A dispensary, staffed by a registered nurse, is available to students during school hours. Services available include first aid for minor accidents and illnesses, assistance in obtaining care, and health counseling.

## JOB PLACEMENT

The basic purpose of our institution is to prepare you for your next station in life. Our Placement Officer will provide you with valuable assistance in your search for the next step in your career. A Career Guidance Library is available to answer your questions about various career fields.

Assistance is provided in obtaining full-time employment in the field for which you have been trained. Many companies conduct employment interviews on campus. And, if your career plans include additional academic preparation, you may gain assistance from the Dean of your School to transfer to a four-year college.

# ACADEMIC REGULATIONS

## *CLASSIFICATION OF STUDENTS – TYPE OF ENROLLMENT*

### REGULAR STUDENT

FULL-TIME: A student who is enrolled as a degree candidate or as a candidate for a certificate and carries a minimum of twelve credit hours or shop courses of sufficient length and time to allow normal progress toward completion of his program.

PART-TIME: A student who is enrolled as a degree candidate or candidate for a certificate and carries fewer credit hours or shop courses than a full-time student.

### CONTINUING EDUCATION STUDENT

A student who carries less of a class load than a full-time or special student and is permitted to select courses without regard to degree or certificate requirements. The Continuing Education student may select certain courses to be transferred toward a degree or certificate program.

### SPECIAL STUDENT

In the School of Applied Arts and Sciences, a special student is one who carries a minimum of twelve credit hours of shop courses equal in length and time to that required of a full-time regular student. In the School of Liberal Arts and Sciences, a special student is usually one who has been readmitted to the College on a full-time basis in order to remedy past academic deficiencies. The special student is permitted to select courses without regard to degree or certificate requirements. While enrolled as a special student a person is not making normal progress toward a degree or certificate.

### CLASSIFICATION OF STUDENTS – CLASS RANK

FRESHMAN - Regular students with fewer than 30 semester hours of credit are members of the freshman class.

SOPHOMORE - Regular students with at least 30 semester hours of credit are members of the sophomore class.

### AUDITING

With the consent of the instructor concerned, a student may enroll as an auditor in a non-laboratory course. Auditors are not required to take examinations and do not receive credit for the course.

## ADVANCED PLACEMENT

Upon entering The Williamsport Area Community College, students who have completed advanced placement courses in high school and who pass appropriate placement examinations may be given advanced placement consideration.

A maximum of 15 credits can be acquired by such examinations. Credit will be given only with the consent of the Chairman of the Department and the Dean of the School concerned.

In all applications for advanced placement and credit, the appropriate Dean and Department Chairman will consider additional information including the quality of the student's work in his secondary schooling. In all instances, the credit given will be in terms of courses corresponding to those courses which are part of the regular curriculum of the College.

## CREDIT BY EXAMINATION – REGISTERED STUDENTS

Students who have been enrolled at The Williamsport Area Community College for at least one semester may earn credit by examination and receive a grade. Application for such examination is made through the respective Dean's office. Approval must then be given by the Chairman of the Department concerned and the Dean of the School. If approval has been received, a fee of $25.00 must be paid at the business office for each examination. The examination is to be taken at a time set by the Chairman of the Department. Presentation of the $25.00 receipt is the Chairman's permission to administer the examination. Such examination may not be given to overcome a D or an F grade.

A maximum of 15 credits may be earned by examination in addition to the 15-credit maximum under Advanced Placement and Credit.

A passing grade on a placement examination will be recorded on the permanent record and will be used in determining the cumulative grade-point average. A grade of F will not be recorded on the permanent record. The faculty is not expected to assist any student preparing for this type examination.

## CREDIT AND CREDIT LOAD

The academic year is divided into two semesters of approximately 16 weeks each. The normal load per semester is 15 to 18 semester hours. A semester hour is, generally, equivalent to one hour per week of lecture or three hours per week of laboratory work. Students should allow an average of two hours preparation for each semester hour of course work.

A student may not enroll for more than 18 semester hours without special permission from the Dean of his respective School.

## WAIVER OF REQUIREMENTS

Under special circumstances, determined by the Dean to merit such action, a student may apply for a waiver of courses usually required in a given program. Requests for waivers must be approved by the Dean and electives must be substituted for credit hours waived under this provision.

## CHANGE OF PROGRAM

A student contemplating a change of program should initiate the change by conferring with his faculty advisor and his Department Chairman.

## DROPPING A COURSE

A student may drop a course any time before the last two weeks of a semester by completing an official "Change of Roster" form. A course dropped before the end of six weeks is recorded with a W grade. No credit is given for a W grade. A course dropped after the end of six weeks is a recorded grade of WF. A grade of WF affects a student's grade-point average in the same manner as an F. A course dropped after six weeks may be recorded as a W only upon recommendation of the instructor and the Dean.

## ADDING A COURSE

Except with permission of the Dean and the instructor, no course may be added after five days of school. However, a change may be initiated by an instructor to reassign a misplaced student whenever it is expedient.

## GRADING SYSTEM

The College uses the following system of grading (4.00 basis) to indicate on its records the quality of a student's work:

| Grade | Significance | Grade Points |
|---|---|---|
| A | Superior | 4 |
| B | Above Average | 3 |
| C | Average | 2 |
| D | Below Average | 1 |
| F | Failing Work | 0 |
| W | Official withdrawal before the end of six weeks | |
| WF | Withdrawal with failure | |
| I | Incomplete (Student must arrange with instructor to complete work before the end of the next semester) | |

A grade reported as INCOMPLETE at the end of a semester will be permanently recorded as an F if the incomplete is not removed within the following semester.

A student's grade-point average is computed by dividing the number of his grade points by the total number of hours for which he has earned a grade of A,B,C,D, or F.

A grade-point average of 2.00 will be required for graduation with an Associate Degree.

The College will notify by mail the parents of all full-time students who are receiving D or F in any subject at mid-semester. Students who receive such grades must immediately consult with their instructors to improve the quality of their work.

## SCHOLASTIC REQUIREMENTS

Any degree candidate whose cumulative grade-point average is below 2.00 will be placed on academic probation. A student on probation will be required to report to the Dean of his respective School for special counseling before being allowed to register for classes the following semester. After interviews with the Dean, adjustment will be made in his academic load and he will be expected to achieve a grade-point average of 2.00 or above for the succeeding semester. A student may be dropped from the College unless he accumulates a grade-point average as follows:

| Beginning of | Cumulative Grade-Point Average |
|---|---|
| Second Semester | 1.50 |
| Third Semester | 1.80 |
| Fourth Semester | 1.90 |

Students are encouraged to seek consultation on academic matters with the Deans of the respective Schools.

It is the prerogative of the Deans of the Schools to drop a student from the College at any time or to place a student on warning for one semester or longer.

## GRADE REPORTS

Reports of unsatisfactory academic progress will be mailed to all students' parents at the end of the first eight weeks of every semester. Final semester grades will be mailed after the end of the semester or the summer session.

## REPEATING A COURSE

A student may repeat a course in which he has earned a grade of D or F; however, he must improve the grade on the repeated course to affect his cumulative grade-point average in which case both grades will appear on his permanent record card and be used in figuring his cumulative grade-point average. If a student repeats a course and earns a second D or F the second grade and credits will not be used in calculating his cumulative grade-point average. He will not be permitted to take the course a third time.

## TERMINATION OF ENROLLMENT

A student may be suspended or dismissed for poor conduct or failure to comply with College regulations.

## TRANSFER WITHIN THE COLLEGE

When a student transfers from one School within the College to another or from one program within the College to another, an evaluation of credits previously earned must be made by the Dean.

*Credits* (or hours) *only* will be accepted in the new program. The cumulative grade-point average will reflect only grades and credits earned in the new program. A student must be enrolled his last semester in College in the School or Program from which he expects to be graduated. For example, if he is enrolled in a degree program his last semester, he cannot receive a diploma from a certificate program because of failure or lack of required subjects in a degree program.

## THE DEAN'S HONOR LIST

The honor list for each School is announced by the Dean of the respective School at the completion of each semester. This list will include only those students carrying twelve credit hours or more who have a grade-point average of 3.30 or better.

## ATTENDANCE REGULATIONS

Regular and prompt attendance at all classes and at scheduled conferences with instructors is expected of all students. All work missed by reason of absence, regardless of the cause, must be made up to the satisfaction of the instructor. A student who knows that he will be absent is expected to get assignments from his instructors in advance so that the necessary work will be completed before he leaves or immediately upon his return. This applies to absences for college activity trips as well as absences for other reasons. In all cases of anticipated absence, the student should confer with his instructor in advance whenever possible.

Students are expected to be in the classroom or laboratory at the scheduled hour. Habitual tardiness may be considered cause for dismissal from the class.

## WITHDRAWAL FROM COLLEGE

If a student finds it necessary to withdraw from the College, he should report to the Dean of his respective School and complete the necessary forms in order to make the withdrawal official. If a student leaves without withdrawing officially, he will be given the grade of WF in all subjects.

## WITHDRAWAL BY REQUEST

The student who continues to be habitually absent from class without good reason will be asked to withdraw from the class by the Dean of his School if, in the opinion of the instructor, further participation in the class seems to be of little value to the student and detrimental to the best interests of the class. Poor work because of lack of effort and interest shall be just cause for withdrawal by request from the College.

Students who are found to be under the influence of, or in possession of, alcoholic beverages or drugs may be dismissed from the College.

In all cases where academic dishonesty is established, the student will be dropped from the course with a grade of F. For a second offense, he may be dismissed from the College. In a case involving a

question of academic dishonesty, the professor in whose class the alleged incident is to have occurred will consult with the Dean regarding appropriate disciplinary action.

## HONORABLE DISMISSAL

No student will receive an honorable dismissal, or be entitled to a transfer of credits earned, who has not satisfactorily accounted for all College property issued to him and settled all outstanding obligations. A student who fails to obtain an honorable dismissal will not be recommended for transfer to another school or for employment.

## FINAL EXAMINATION

Final examinations are scheduled at designated times at the end of each semester. The schedule normally provides for an examination period for each course. A student who is absent from a final examination without good reason is subject to a failing grade.

## GRADUATION REQUIREMENTS

1. The successful completion of a prescribed two-year program of study at The Williamsport Area Community College leads to an Associate of Arts Degree or an Associate of Science Degree from the School of Liberal Arts and Sciences or an Associate in Applied Arts Degree or an Associate in Applied Science Degree from the School of Applied Arts and Sciences.

To be eligible for a degree from The Williamsport Area Community College, the student is expected to satisfy the following:

a. Complete a minimum of sixty (60) semester hours (in addition to physical education) no less than thirty (30) of which must have been earned at The Williamsport Area Community College. The fourth semester must have been completed at the College.
b. Earn at least a C average (2.00 grade-point average).
c. Satisfy health and physical education requirements.
d. Fulfill all financial obligations to the College.

2. Certificates will be awarded for the satisfactory completion of certain courses or the satisfactory completion of a series of courses designed for a specific purpose.

# COMMENCEMENT AWARDS

PRESIDENT'S AWARD for leadership and service to the College community.

TRUSTEES' AWARD to a male student for achievement under exceptional conditions.

TRUSTEES' AWARD to a female student for achievement under exceptional conditions.

DEANS' AWARD for scholastic achievement in the School of Liberal Arts and Sciences.

DEANS' AWARD for scholastic achievement in academic subjects in the School of Applied Arts and Sciences.

ALCAN CABLE AWARD for scholastic achievement in Engineering Science.

AVCO AWARD for scholastic achievement in Humanities and Social Sciences.

DARLING VALVE AWARD for scholastic achievement in Applied Arts and Sciences (Certificate Program).

M.W. KELLOGG AWARD for scholastic achievement in Applied Arts and Sciences (Associate Degree Program).

ANONYMOUS AWARD for effectiveness in written and oral English in the School of Liberal Arts and Sciences.

ANONYMOUS AWARD for effectiveness in written and oral English in the School of Applied Arts and Sciences.

LEWIS H. BARDO MEMORIAL AWARD to a student who exemplifies the ideals of Lewis H. Bardo.

DALE RUSS BERG MEMORIAL AWARD for proficiency in the operation and use of heavy equipment.

HOWARD AWARD for scholastic achievement in Forestry.

ELIZABETH R. DOWNS MEMORIAL AWARD for secretarial proficiency.

PENN-YORK LUMBERMAN'S AWARD to the student who demonstrates the greatest promise and potential for service in forest resource management and conservation.

**Top Award Winner:** *The family of Robert N. Weller had plenty of reasons to be proud as he received two awards at the College commencement. Mr. Weller's wife, Beverly, was instrumental in the 28-year-old man's decision to get a higher education. He and his family, Wendi, six; Terri, four; and Nikki, two, have moved to Ithaca, N.Y., where Weller is working toward a degree in veterinary medicine at Cornell University.*

# *GRADUATION ISN'T THE END –*
# *IT'S COMMENCEMENT*

## *Our Graduates Return –*

To keep in touch with our Placement Officer for job opportunities!

To visit a favorite instructor
and introduce us to a future member of the Class of '86!

ell us about their exciting new jobs as executive secretaries!

# CALENDAR 1969–70

## *Fall Semester 1969*

| | | |
|---|---|---|
| September 4-5 | Thursday-Friday | Pre-registration and Orientation (Freshmen) |
| September 8-9 | Monday-Tuesday | Registration (Regular Students) |
| September 10 | Wednesday | Continuing Education Registration |
| September 11 | Thursday | First Semester begins |
| October 10-12 | Friday-Sunday | Fall Weekend (Suggested) |
| October 17 | Friday | Open House |
| October 18 | Saturday | Parents' Day (Suggested) |
| November 10 | Monday | Mid-Semester grades |
| Nov. 26 - Dec. 2 | Wednesday-Tuesday | Thanksgiving Recess |
| December 22 | Monday | Christmas Recess begins at close of classes |
| January 3 | Saturday | Christmas Recess ends-classes begin |
| January 17-22 | Saturday-Thursday | Final examinations |

## *Spring Semester 1970*

| | | |
|---|---|---|
| January 29-30 | Thursday-Friday | Pre-registration and Orientation (Freshmen) |
| February 2-3 | Monday-Tuesday | Registration (Regular Students) |
| February 4 | Wednesday | Continuing Education Registration |
| February 5 | Thursday | Second Semester begins |
| March 26-30 | Thursday-Monday | Easter Recess |
| April 2 | Thursday | Mid-Semester grades |
| May 15-17 | Friday-Sunday | Spring Weekend |
| May 26-30 | Tuesday-Saturday | Final examinations |
| June 6 | Saturday | Commencement |

## *Summer Session 1970*

| | | |
|---|---|---|
| June 16 | Monday | Registration |
| June 17 | Tuesday | Summer School begins |
| June 21 | Saturday | Classes in session |
| July 4 | Friday | Vacation |
| July 12 | Saturday | Classes in session |
| August 7-8 | Thursday-Friday | Final examinations |

# CALENDAR 1970–71

## *Fall Semester 1970*

| | | |
|---|---|---|
| September 8-9 | Tuesday-Wednesday | Pre-registration and Orientation (Freshmen) |
| September 10-11 | Thursday-Friday | Registration (Regular Students) |
| September 14 | Monday | Continuing Education Registration |
| September 15 | Tuesday | First Semester begins |
| October 9-11 | Friday-Sunday | Fall Weekend (Suggested) |
| October 16 | Friday | Open House |
| October 17 | Saturday | Parents' Day (Suggested) |
| November 12 | Thursday | Mid-Semester grades |
| November 25-30 | Wednesday-Monday | Thanksgiving Recess |
| December 21 | Monday | Christmas Recess begins at close of classes |
| January 2 | Saturday | Christmas Recess ends—classes begin |
| January 16-22 | Saturday-Friday | Final examinations |

## *Spring Semester 1971*

| | | |
|---|---|---|
| January 28-29 | Thursday-Friday | Pre-registration and Orientation (Freshmen) |
| February 1-2 | Monday-Tuesday | Registration (Regular Students) |
| February 3 | Wednesday | Continuing Education Registration |
| February 4 | Thursday | Second Semester begins |
| April 2 | Friday | Mid-Semester grades |
| April 8-12 | Thursday-Monday | Easter Recess |
| May 14-16 | Friday-Sunday | Mid-Semester grades |
| May 25-29 | Tuesday-Saturday | Final examinations |
| June 5 | Saturday | Commencement |

## *Summer Session 1971*

| | | |
|---|---|---|
| June 14 | Monday | Registration |
| June 15 | Tuesday | Summer School begins |
| June 19 | Saturday | Classes in session |
| August 5-6 | Thursday-Friday | Final examinations |

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# THE WILLIAMSPORT AREA COMMUNITY COLLEGE

## 69/71 CATALOG ADDENDUM

*Written and inserted June, 1970,*
*for the purpose of updating the publication.*

### GENERAL

1. The College Skills Program (page 55) may also be termed Developmental or Skills-Developmental.
2. The School of Liberal Arts and Sciences uses the following code system to identify curricula and students: Liberal Studies (LL), Mathematics-Science (LM), Engineering (LE), Education-Social Work (LD), Business Administration (LB), College Skills (LC), and Special Student (LX).
3. The course, PHY ED 102 Physical Education, has been changed from one (1) to two (2) credits.
4. Students in the School of Liberal Arts and Sciences Education-Social Work (LD) Program may take courses in Natural Sciences if they plan to teach in those fields. Such courses may also be substituted for certain electives.
5. French 101 and 102 will not be taught during the '70-'71 term.
6. The Surgical Technician Program (ST), Certificate 40/weeks, (page 158) should be listed in the index.

### PAGE COPY

**1. Page 36**

Geology, Geography, Biology, Chemistry and Physics now comprise the Department of Natural Sciences, Ronald E. Thompson, Chairman; Ramon H. Palmer, Associate Chairman.

James E. Logue is Chairman of the English, Speech and Drama Department; Charles Q. Simcox is Associate Chairman.

**2. Page 86**

Aviation Maintenance Technician (AC) Program, fourth semester, course AC 40 Advanced Airframe and Powerplant total hours semester has been changed from 440 to 472; total fourth semester hours from 488 to 520.

**3. Page 87**

AC 40 Advanced Airframe Powerplant is changed from 440 hours to 472; CP 10 Primary Flight should read CP 10 Primary Flight 1, one semester hours credit, course description: Phase 1 - An introduction to flight, thirty hours of instruction. (15 hours of dual flight time, 5 hours of solo flight time and 10 hours of oral briefing.) CP 20 Commercial Flight has been

changed to CP 20 Primary Flight 11, one semester hours credit, course description: Phase 11 - A continuation of Primary Flight 1, thirty-two hours of instruction. (10 hours of dual flight time, 10 hours of solo flight time and 12 hours of oral briefing.) The successful completion of this phase should qualify the student to take the private pilot's licensing tests. Prerequisites: CP 10, CP 11 and CP 12. CP 30 Commercial Flight 11 has been changed to read CP 23 Pilot Preventative Maintenance, two semester hours credit, course description: Pilot's responsibilities and limitations in maintaining aircraft; types of aircraft maintenance: preventative, minor, major; basic maintenance procedures and precautions for pilots.

4. Page 88

Delete CP 40 Instrument and Multi-Engine Ratings.

5. Page 117

Delete ED 50 Advanced Detail and Design from the list of electives.

6. Page 120

Mechanical Drafting (MD) Program, first semester, courses MD 15 Drafting I and MD Drafting II have been changed to eight weeks each, 24 hours per week lab/practicum, 200 hours each, total 496 in place of 512.

7. Page 123

Delete high school trigonometry from prerequisites of CT 10 Introductory Surveying.

8. Page 124

ED 10 Basic Drafting I has been changed from 128 hours to 120; ED 11 Basic Drafting II from 128 hours to 120; ED 20 Gears and Cams from 128 hours to 120; ED 21 Mechanisms from 128 hours to 120; ED 30 Detail and Assembly Drawings from 128 hours to 120; ED 31 Applied Drafting Techniques from 128 hours to 120; ED 40 Advanced Detail I from 128 hours to 120; ED 41 Advanced Detail II from 128 hours to 120.

9. Page 126

TD 30 Cutting-Tool Design has been changed from 128 hours to 120; TD 31 Fixture Design from 128 hours to 120; TD 40 Gage Design and Programming from 128 hours to 120; TD 41 Die Design from 128 hours to 120; TI 21 Perspective Drawing from 128 hours to 120; TI 23 Rendering I from 128 hours to 120; TI 31 Axonometric Drawing from 128 hours to 120; TI 33 Color from 128 hours to 120; TI 40 Illustration Practice from 128 hours to 120.

10. Page 127

TI 41 Technical Drawing has been changed from 128 hours to 120.

11. Page 130

Electrical Technology (EL) Program, third semester, EL 33 Instrumentation-Applications I should read EI 33 Instrumentation-Applications I.

## ADMISSIONS

### School of Applied Arts and Sciences (Page 57)

For individuals applying to the School of Applied Arts and Sciences after September 1, 1971, the following will be required before a student may be accepted for admission. This will replace the testing program previously administered by the College.

**Associate Degree candidates** will be required to submit American College Testing (ACT) scores. These scores are necessary for planning appropriate programs of study.

Submit a completed Health Certificate after acceptance.

Submit the above information to the College Admissions' Office.

**Certificate candidates** will be required to submit the results of the Career Planning Profile (CPP) which is administered by The American College Testing Program rather than ACT Test Scores. The CPP results are necessary for planning appropriate programs of study.

Submit a completed Health Certificate after acceptance.

Submit the above information to the College Admissions' Office.

## PROGRAM AND CURRICULUM CHANGES

*The following Programs are at present undergoing curriculum changes:*


Automotive Technology (AU) . . . . . Page 74
Diesel Technology (DT). . . . . Page 75
Auto Body Repairman (AB) . . . . . Page 76
Automotive Mechanics (AM) . . . . . Page 77
Diesel Mechanics (DM) . . . . . Page 78
Service and Operation of Heavy Equipment (SO) . . Page 79
Secretarial Science (BS). . . . . Page 102
Electrical Instrumentation Technology (EI) . . . . . Page 137
Electronics Technology (ET) . . . . . Page 138
Forest Technology (FR) . . . . . Page 147
Library Assistant (LS) . . . . . Page 173
Toolmaking Technology (TT). . . . . Page 177


*Course descriptions in the following departments are undergoing changes:*


Automotive Department . . . . . Pages 80 to 83
Business Administration Department . . . . Page 104
Computer Science Department . . . . . Pages 111 to 113
Drafting Department. . . . . Pages 121 to 127
Electronics Department. . . . . Pages 139 to 141
Forestry Department . . . . . Page 149
Industrial Management Department. . . . . Page 163
Physics Department . . . . . Page 192


## SPECIFIC PROGRAM CHANGES

Marked revisions in the courses and hours of four programs require that their present official changes be printed in detail. Programs affected are listed in detail on the following pages to update those found on pages 85, 117, 118 and 119 respectively.

# CAREER PILOT TECHNOLOGY (CP)

*Associate Degree / Two Years*

If you are interested in becoming a career pilot, this program is where you begin. The curriculum includes the related and ground courses designed to prepare you for the Private, Commercial and Instrument written and oral examinations. The skill requirement is limited to Private Pilot level. To attain the full status of a CAREER PILOT, additional flight training and experience will be necessary. This added training is optional with each individual according to the ratings desired.

**Types of Jobs:** Typical jobs with full Career Pilot status; flight instructor (with appropriate rating); corporate and charter pilot.

**Job Opportunities:** Adequate and increasing with the growth of the Aero-Space Industry.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CP 10 | Primary Flight I | 1 | .5 | 1.5 | 30 |
| CP 11 | Aeronautical Science | 3 | 3 | 0 | 48 |
| CP 12 | Navigation Science I | 3 | 3 | 0 | 48 |
| CP 13 | Eng. & Aircraft Structures | 3 | 3 | 0 | 48 |
| ENG 11 | Language & Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Algebra | 4 | 4 | 1 | 80 |
| | | 17 | 16.5 | 2.5 | 302 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CP 20 | Primary Flight II | 1 | .7 | 1.5 | 32 |
| CP 21 | Meteorology | 3 | 3 | 0 | 48 |
| CP 22 | Aerodynamics | 3 | 3 | 0 | 48 |
| CP 23 | Preventative Maintenance (Pilot) | 2 | 2 | 0 | 32 |
| ENG 12 | Language & Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | 16 | 15.7 | 2.5 | 288 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CP 31 | Navigational Science II | 3 | 3 | 0 | 48 |
| CP 32 | Aeronautical Science II | 3 | 3 | 0 | 48 |
| ENG 13 | Technical Writing | 2 | 2 | 0 | 32 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | Psychology 101 | 3 | 3 | 0 | 48 |
| | Physical Education | 1 | 2 | 0 | 32 |
| | | 16 | 16 | 0 | 272 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| CP 41 | Aeronautical Science III | 3 | 3 | 0 | 48 |
| CP 42 | Instrument Flight Theory | 3 | 3 | 0 | 48 |
| IM 31 | Human Relations, Supervision | 3 | 3 | 0 | 48 |
| | Political Science | 3 | 3 | 0 | 48 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 15 | 15 | 0 | 240 |

***Electives (General Studies):** ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# ENGINEERING DRAFTING TECHNOLOGY (ED)

*Associate Degree / Two Years*

This program will give you a broad knowledge of mechanical drafting and engineering procedures and will provide you with the necessary background in mathematics, science and communications skills to work as a technician or engineering aide. As a graduate of this program you will be prepared to make a variety of engineering drawings and calculations.

**Types of Jobs:** Mechanical detail and layout draftsman, engineering assistant or aide, checker, field department supervisor, or jobs in related areas such as planning, traffic safety, maintenance and purchasing.

**Job Opportunities:** Unlimited in many industries with excellent starting salaries and opportunities for advancement and further industry-financed education.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 10 | Basic Drafting I (Eight Weeks) | 4 | 3 | 12 | 120 |
| ED 11 | Basic Drafting II (Eight Weeks) | 4 | 3 | 12 | 120 |
| ED 12 | Industrial Processes | 2 | 2 | 1 | 48 |
| ENG 11 | Language & Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 17 | 12 | 14 | 416 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 20 | Gears and Cams (Eight Weeks) | 4 | 3 | 12 | 120 |
| ED 21 | Mechanisms (Eight Weeks) | 4 | 3 | 12 | 120 |
| ENG 12 | Language & Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 18 | 13 | 13 | 416 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 30 | Detail and Assembly Drawings (Eight Weeks) | 4 | 3 | 12 | 120 |
| ED 31 | Applied Drafting Techniques (Eight Weeks) | 4 | 3 | 12 | 120 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 18 | 13 | 12 | 400 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 40 | Advanced Detail I (Eight Weeks) | 4 | 3 | 12 | 120 |
| ED 41 | Advanced Detail II (Eight Weeks) | 4 | 3 | 12 | 120 |
| PHY 32 | Physics-Heat and Light | 3 | 3 | 0 | 48 |
| | **Elective | 3/4 | 2/4 | 0/6 | 48-64 |
| | | 14/15 | 8/10 | 12/18 | 336/352 |

*Electives (General Studies): ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 02 - Introduction to Computer Language.

**Electives: ED 51 Descriptive Geometry; MAT 31 Calculus I; PHY 22 Introduction to Metallurgy; PHY 31 Physics-Electricity and Magnetism; ED 50 Advanced Detail and Design; TD 21 Tool Drafting.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# TOOL DESIGN TECHNOLOGY (TD)

*Associate Degree / Two Years*

In Tool Design Technology you will specialize in planning and making drawings of special mechanical devices (cutting tools, gages, dies, jigs, fixtures) ranging from simple hand tools to complex progressive dies. You will learn drafting and tool production practices, and you will produce tool drawings. You will be taught how to write programs for production jobs on tape-controlled machines.

**Types of Jobs:** Tool, machine, and product designer; numerical programmer, design draftsman, estimator, and systems program designer.

**Job Opportunities:** Unlimited in many industries with excellent starting salaries and opportunities for advancement and further industry-financed education.

FIRST SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 10 | Basic Drafting I (Eight Weeks) | 4 | 3 | 12 | 120 |
| ED 11 | Basic Drafting II (Eight Weeks) | 4 | 3 | 12 | 120 |
| ED 12 | Industrial Processes | 2 | 2 | 1 | 48 |
| ENG 11 | Language & Composition | 3 | 3 | 0 | 48 |
| MAT 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | 17 | 12 | 14 | 416 |

SECOND SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| ED 20 | Gears and Cams (Eight Weeks) | 4 | 3 | 12 | 120 |
| TD 21 | Tool Drafting (Eight Weeks) | 4 | 3 | 12 | 120 |
| TT 01 | Basic Machine Shop | 2 | 2 | 4 | 96 |
| ENG 12 | Language & Composition | 3 | 3 | 0 | 48 |
| MAT 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | 17 | 12 | 17 | 464 |

THIRD SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| TD 30 | Cutting-Tool Design (Eight Weeks) | 4 | 3 | 12 | 120 |
| TD 31 | Fixture Design (Eight Weeks) | 4 | 3 | 12 | 120 |
| TT 02 | Basic Machine Shop | 2 | 2 | 4 | 96 |
| PHY 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | 17 | 12 | 16 | 448 |

FOURTH SEMESTER

| | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|
| TD 40 | Gage Design and Programming (Eight Weeks) | 4 | 3 | 12 | 120 |
| TD 41 | Die Design (Eight Weeks) | 4 | 3 | 12 | 120 |
| TT 03 | Basic Machine Shop | 2 | 2 | 4 | 96 |
| ECO 11 | Economics | 3 | 3 | 0 | 48 |
| PHY 22 | Introduction to Metallurgy | 4 | 4 | 0 | 64 |
| | | 17 | 12 | 16 | 448 |

*Electives (General Studies): ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

Physical Education for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

# TECHNICAL ILLUSTRATION (TI)

*Associate Degree / Two Years*

This program will enable you to work with engineering draftsmen or technical writers. Your job will be to interpret engineering drawings into three-dimensional illustrations. The courses leading to an Associate Degree in Technical Illustration will give you not only the drawing skills necessary for this work but also the broad background in science, mathematics, and communications helpful for advancement in industry.

**Types of Jobs:** Technical illustrator for industry, either in an engineering department or in a publications department; in the engineering field you would produce clear, accurate pictures drawn from blueprints for engineers; illustrations for company literature: parts and sales catalogs, maintenance, repair, and assembly manuals, charts, and handbooks.

**Job Opportunities:** Technical illustration has advanced rapidly in industry in the last few years, and the demand for qualified people far exceeds the supply. Starting salaries are excellent.

FIRST SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| ED | 10 | Basic Drafting I (Eight Weeks) | 4 | 3 | 12 | 120 |
| ED | 11 | Basic Drafting II (Eight Weeks) | 4 | 3 | 12 | 120 |
| ED | 12 | Industrial Processes | 2 | 2 | 1 | 48 |
| ENG | 11 | Language & Composition | 3 | 3 | 0 | 48 |
| MAT | 13 | Intermediate Algebra | 4 | 4 | 1 | 80 |
| | | | 17 | 12 | 14 | 416 |

SECOND SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| GA | 10 | Reproduction Processes I | 1 | 1 | 1 | 32 |
| TI | 21 | Perspective Drawing (Eight Weeks) | 4 | 3 | 12 | 120 |
| TI | 23 | Rendering I (Eight Weeks) | 4 | 3 | 12 | 120 |
| ENG | 12 | Language & Composition | 3 | 3 | 0 | 48 |
| MAT | 21 | Trigonometry | 4 | 4 | 1 | 80 |
| | | | 16 | 11 | 14 | 400 |

THIRD SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| GA | 30 | Reproduction Processes III | 1 | 1 | 1 | 32 |
| TI | 31 | Axonometric Drawing (Eight Weeks) | 4 | 3 | 12 | 120 |
| TI | 33 | Color | 2 | 1 | 3 | 64 |
| TI | 34 | Rendering II (Eight Weeks) | 4 | 3 | 12 | 120 |
| PHY | 21 | Physics-Mechanics | 4 | 4 | 0 | 64 |
| | | | 15 | 9 | 16 | 400 |

FOURTH SEMESTER

| | | Course | Cr. | Hours Per Week Lect. | Lab./ Practicum | Total Hours Sem. |
|---|---|---|---|---|---|---|
| TI | 40 | Illustration Practice (Eight Weeks) | 4 | 3 | 12 | 120 |
| TI | 41 | Technical Drawing (Eight Weeks) | 4 | 3 | 12 | 120 |
| TI | 42 | Layout and Design | 2 | 1 | 3 | 64 |
| ECO | 11 | Economics | 3 | 3 | 0 | 48 |
| | | *Elective (General Studies) | 3 | 3 | 0 | 48 |
| | | | 16 | 10 | 15 | 400 |

*Electives (General Studies): ENG 14 Speech; English 201 or 202 - History of English Literature; English 211 - Fundamentals of Speech; Government 201 - American Government - National; Government 202 - State and Local Government; History 201 - History of the United States; Psychology 101 - General Psychology; Spanish 101 or 102 - Beginning Spanish; Sociology 101 - Introduction to Sociology; CS 01 Introduction to Data Processing.

**Physical Education** for Applied Arts and Sciences students is presently available to only a limited number, resulting from the fact that the Gymnasium is required part-time by the Williamsport School District. Physical Education courses will be available and required of all students as rapidly as our planned building program permits.

Qualified Applied Arts and Sciences students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

## TUITION AND FEES

For one semester — Updated (page 227) as of June, 1970.

| | *Resident of Sponsor District* | *Resident of Non-Sponsor District* | *Out-of-State Resident* |
|---|---|---|---|
| Tuition | $177.50 | $355.00 | $532.50 |
| Service Fee | NONE | 85.00 | 170.00 |
| Activity Fee | 7.00 | 7.00 | 7.00 |
| *Lab Fee | 10.00 | 10.00 | 10.00 |
| Total | $194.50 | $457.00 | $719.50 |

Resident of another Pennsylvania Community College District: (with home-district approval)

| | |
|---|---|
| Tuition | $177.50 |
| Service Fee | 85.00 |
| Activity Fee | 7.00 |
| *Lab Fee | 10.00 |
| Total | $279.50 |

Application Fee (new students only) . . . . . $10.00

Part-time student in the School of Continuing Education and Community Services:

| | *Per Credit Hour* |
|---|---|
| Resident of Sponsor District | $15.00 |
| Resident of Non-Sponsor District | $37.00 |
| Out of State | $59.00 |

*When applicable

## HOUSING

To replace information on page 228.

MEN

A listing of living facilities will be mailed each student after the registration deposit has been received. However, the College also provides limited room and board for 125 men in the Hoover Houses on a first-come-first-serve basis for $460.00 a semester.

A damage deposit of $25.00 is required of students occupying the Hoover Houses which is refunded in full upon graduation less any damage costs charged to the student.

It is estimated that room and board for men costs approximately $25.00 to $28.00 a week.

WOMEN

A supervised dormitory in the attractive Lycoming Hotel houses women students for $285.00 per semester. All women residents under 21 years of age are expected to live in this facility.

## ACADEMIC YEAR EXPENSES

Changes in ESTIMATED EXPENSES FOR THE ACADEMIC YEAR (page 230).

| | |
|---|---|
| Tuition | $355.00 |
| Activity Fee | $14.00 |
| Lab Fee | $20.00 |
| Books and Supplies | $150.00 |
| Board and Room (Hoover Houses) | $920.00 |
| Room (Lycoming Hotel) | $570.00 |
| Travel (bus or gasoline) | $88.00 |
| Clothing | $100.00 |
| Personal | $200.00 |

## GRADUATION REQUIREMENTS

Graduation Requirements (page 252) number one (1), letter A (a), should be changed to read:

Complete a prescribed program of study as set forth in this catalog.

## *I FOUND A PROGRAM TO FIT MY ABILITIES AND NEEDS!*

Please send me an Application for Admission form to
THE WILLIAMSPORT AREA COMMUNITY COLLEGE

Name_____

Address_____ Tel. No._____

City_____ State_____ Zip Code_____

High School_____ Year of Graduation_____

College (s) attended_____

I am interested in the_____ program_____

I would like further information about_____

_____

_____

## *I FOUND A PROGRAM TO FIT MY ABILITIES AND NEEDS!*

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THE WILLIAMSPORT AREA COMMUNITY COLLEGE

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Address_____ Tel. No._____

City_____ State_____ Zip Code_____

High School_____ Year of Graduation_____

College (s) attended_____

I am interested in the_____ program_____

I would like further information about_____

_____

_____

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WILLIAMSPORT, PA.

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## *NOW THAT YOU HAVE*

### *MET*

OUR ADMINISTRATORS
OUR FACULTY
OUR STUDENTS
OUR GRADUATES

### *EXAMINED*

THE PROGRAMS AVAILABLE FOR YOU IN THE
SCHOOL OF LIBERAL ARTS AND SCIENCES
SCHOOL OF APPLIED ARTS AND SCIENCES
SCHOOL OF CONTINUING EDUCATION AND COMMUNITY SERVICES

### *WE HOPE THAT YOU HAVE DISCOVERED*

THE TWO-YEAR COLLEGE TRANSFER PROGRAM OR
THE ONE OR TWO-YEAR CAREER PROGRAM
DESIGNED TO FIT YOUR ABILITIES AND NEEDS!

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1005 West Third Street, Williamsport, Pa. 17701
Phone-(717) 326-3761

Catalog Issue, Vol. 4, September 1969, No. 1

*The programs and requirements set forth in this publication are necessarily subject to change at any time at the discretion of the administration.*

DRINKS
CASHIER